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NEW ENGLAND SURGICAL SOCIETY

THE TREATMENT OF PERIPHERAL VASCULAR LESIONS*

A. The Use of Foreign Protein. B. Alcohol Injection of Peripheral Sensory Nerves.

BY R. H. SMITHWICK, M.D.†

A. THE USE OF FOREIGN PROTEIN IN THE TREATMENT OF PERIPHERAL VASCULAR LESIONS

THE use of foreign protein intravenously in the form of typhoid vaccine has furnished us with a valuable aid in the conservative treatment of peripheral vascular lesions[1]. Until recently, it was our chief mode of attack upon extensive vasomotor and obliterative lesions in young and middle-aged individuals. In the past two years, however, the value of dorsal and lumbar sympathectomy in purely vasomotor disorders has been so conclusively demonstrated that surgical treatment in these cases is preferable to the use of foreign protein unless such a major operation is clearly contraindicated or unless the response to foreign protein is so lasting that surgery is unnecessary.

In a similar way, repeated administration of foreign protein in cases of obliterative vascular disease in young and middle-aged individuals has, until recently, been our most successful method of treating the group of cases which would ordinarily be classified as thrombo-angiitis obliterans. The value of alcohol injections of sensory nerves of the lower extremity in the treatment of obliterative vascular lesions has been so clearly demonstrated in our clinic, during the past two years, that a comparatively minor surgical procedure has, in many instances, superseded the use of typhoid vaccine.

The use of typhoid vaccine intravenously was first popularized by Brown[2], who used it as an index for operative treatment of vasomotor disorders in particular. He found that the degree of benefit which temporarily followed intravenous injection of small doses of typhoid vaccine was permanently maintained after a dorsal or lumbar sympathectomy. It seemed to us that, by making use of this temporary hyperemia at frequent intervals in persistent ulcerative lesions due to obliteration of main vessels, healing might ensue. Our results in a series of cases treated in this manner showed this to be true.

*From the Circulatory Clinic of the Massachusetts General Hospital.
Read before the Annual Meeting of the New England Surgical Society at Boston, September 27, 1930.

†Smithwick—Assistant Surgeon to Outpatients, Massachusetts General Hospital. For record and address of author see "This Week's Issue", page 887.

The technique of administration of typhoid vaccine is simple. From 50 to 250 million bacilli are introduced into a vein in an aseptic manner. The object is to produce a fever of about 103° F. by mouth. Following the injection, certain definite changes take place (Fig. 1). There is a

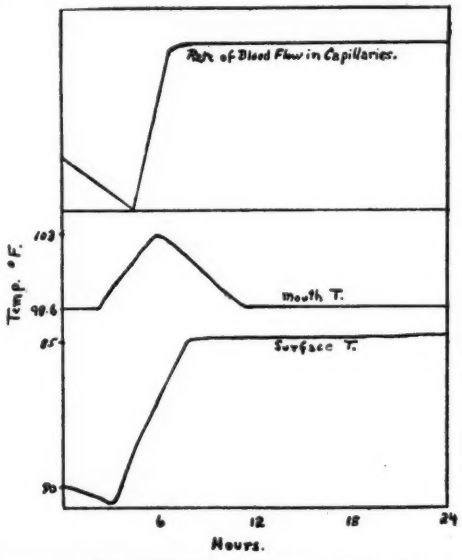

FIG. 1. Showing changes in rate of blood flow in capillaries, mouth temperature, and surface temperature of body following intravenous typhoid vaccine.

latent period of two hours or less during which the peripheral circulation is retarded, the extremities become cooler and perhaps more cyanotic, and the circulation in the capillaries comes to a standstill. Then there is a chill, lasting perhaps one-half hour. The temperature rises rapidly in about four hours to its maximum, and then falls in about six hours to normal. The peripheral circulation increases tremendously to many times its normal rate and at the end of twenty-four hours, although the mouth temperature may be normal, there is frequently no retardation of the rate of blood flow in the capillaries. The extremities become warmer, drier and of better color. Their surface temperature may rise as much as 15° F., and we have known it to take a week for the surface temperature of an extremity to gradually fall to its previous level.

During the first stage of the reaction, the pos-

sibility of thrombosis must be kept in mind. We have reported two cases in which a thrombosis of the femoral artery occurred, which resulted in the loss of the extremity[3]. Both were cases of obliterative vascular disease due to senile arteriosclerosis. We have never known it to occur in a

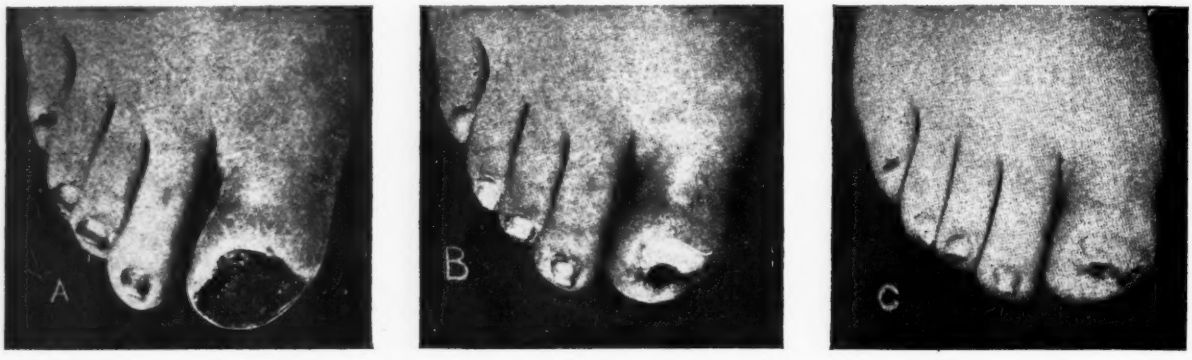

FIG. 2. Ulcer 2 by 2 cm.; healed in two months: *A*, before treatment; *B*, after one month, and *C*, after seven weeks. Ulcer entirely healed one week after last photograph was made.

Reprinted from *J. A. M. A.*—Oct. 20, 1928, Vol. 91, pp. 1161-1168.

vasomotor disorder or a case of obliterative vascular disease in young or middle-aged individuals. It has been demonstrated by Dr. Frank Fremont-Smith that if the extremity is preheated to about 100° F. with blankets and hot water bottles, the preliminary slowing of the

FIG. 3. Thrombo-angiitis obliterans with extensive obliteration of main vessels—ulcer 2x1 cm. present for 1½ years. Healed in four months of ambulatory treatment. Eight intravenous typhoid injections.

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peripheral blood stream does not occur. Hence, the danger of thrombosis is minimized. We, therefore, feel that intravenous foreign protein should not be used in cases of senile arteriosclerosis, and we arbitrarily set an age limit of fifty years as the danger zone, and stipulate that, before it is given, the extremities be preheated as described above. We also recommend that it be given not more frequently than once a week. The results obtained in several cases by this method of treatment are shown in Figures 2, 3 and 4 and a summary of 41 cases is given in Table I.

SUMMARY

We feel, at the present time, that foreign protein is a distinct addition to our other methods of treating these cases. In vasomotor disease in young people it can be used as an index for operative treatment. If the result is striking and injections needed at infrequent intervals, it may be used as the only method of treatment.

In obliterative vascular disease in young and middle-aged individuals, it is often of great value in the early stages, when indefinite pain and intermittent claudication are prominent features. When ulceration ensues, if typhoid vaccine does not heal the ulcer in a reasonable length of time, or adequately control the pain, which is often intense, we recommend alcohol injection of the peripheral nerves, which will be described next.

We feel that it never should be used in cases of senile arteriosclerosis. Obliterative vascular disease in patients over fifty years of age is usually due to this cause.

The extremities of all patients receiving typhoid vaccine intravenously should be preheated to 100° F. with blankets and hot-water bottles.

B. ALCOHOL INJECTION OF PERIPHERAL SENSORY NERVES

One of the most distressing and difficult symptoms to control is the agonizing pain which accompanies ulceration in a lower extremity the circulation of which is decreased by obliterative vascular disease. There are no drugs which will relieve this pain. The ulcerations themselves are exquisitely tender to touch. Because of this fact, it is impossible to dress the lesions in a satisfactory manner. Infection thus gets the upper hand, and thrombosis of the capillary circulation, upon which such an extremity exists, usually ensues. Further gangrene results, and a major amputation is done. Not infrequently extremities are sacrificed for pain alone.

In an attempt to relieve this situation, we have desensitized painful ulcerated areas of the lower extremity by injecting the sensory nerve supply with alcohol. The most important step in our technique has been to expose the nerves in question in the upper two-thirds of the lower leg through small vertical incisions, using careful asepsis, and being sure not to spill alcohol into the tissues. Under these circumstances, the incisions practically always heal by first intention.

The anatomy of the lower leg is particularly suited for this procedure, because the entire foot and ankle can be anesthetized by injecting five readily accessible nerves. Often the area in question can be blocked by injecting two or three nerves. It is possible to do this without causing any important muscular paralyses.

The nerves in question are the posterior tibial, superficial peroneal, deep peroneal, saphenous, and sural. Our technique for exposing these nerves and the results obtained in the first eleven cases have recently been described in detail[4].

The actual technique of the operation is demonstrated in Figures 5 and 6. These together with Figures 7 to 11, illustrating typical areas of anesthesia, serve to show the proper position for incisions. In brief, all of the nerves may be exposed at a level six inches above the tip of the external or internal malleolus. The nutrition at this level is practically always adequate to insure primary union. The deep peroneal nerve is particularly difficult to expose at this level because it is rather small and deeply placed. It is practically always necessary to inject both peroneal nerves as the most frequent site of ulceration is on the first and second toes. We are, therefore, prone to use the muscle-splitting incision, so placed as to make the injection at least 3 inches below the upper end of the fibula. The operation should always be done under local anesthesia, first injecting novocaine, and testing out the zone of anesthesia and motor function, before inserting the alcohol. At a level six inches above the malleoli it is impossible to produce a foot

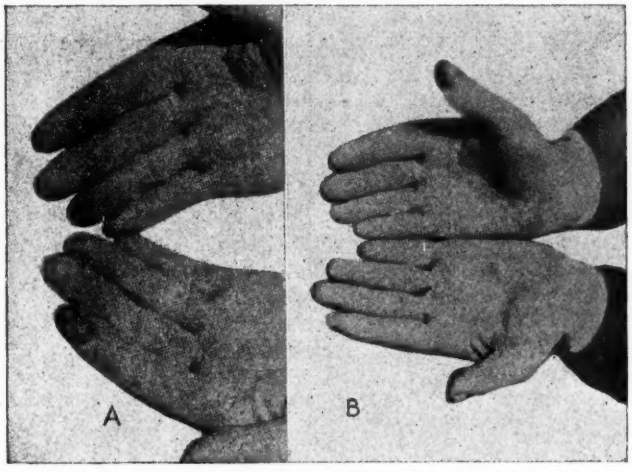

FIG. 4. *A*, condition on admission: Gangrene of terminal phalanges of second and third digitis of left hand and fourth digit of right hand. There was also a small area of gangrene of the second finger of the right hand which barely shows in the photograph. *B*, two months after treatment: complete healing; note slight deformity of the terminal phalanx of index finger of left hand. A pure vasomotor disuse—main vessels normal. Only one injection of typhoid vaccine was necessary in this case.

Reprinted from *J. A. M. A.*—Oct. 20, 1928, Vol. 91, pp. 1161-1168.

TABLE I

	Vasomotor Disease (Raynaud)	Thrombo-angiitis Oblit-erans	Arterio-sclerosis with and without diabetes	Total
Number of cases treated	10	24	7	41
Average age	25	40	60	
Average duration symptoms (years)	2.9	4.4	0.4	
Number with complete disability	3	18	7	28
Minor amputation necessary	1	6	1	8
Major amputation necessary	0	3	4	7
Average number of treatments	3	9	8	
Average duration of treatments (months)	5	8	4	
Improved	9	17	4	30
Not improved	1	7	3	11
Complete disability now including cases c major amputations	1	6	4	11

drop. If the injection is made three inches or more below the head of the fibula in the case of the peroneal nerves, this difficulty can be avoided. Whenever the posterior tibial nerve

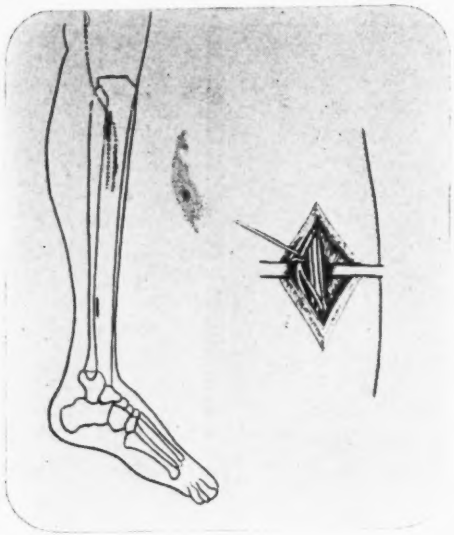

FIG. 5. Showing position of incisions to expose peroneal nerves. The upper incision is placed just anterior to the fibula, centered 3 inches below the head. Alcohol injections at this level will not cause a foot drop. The lower incision is made just anterior to the fibula 6 inches above the tip of the external malleolus if the superficial peroneal nerve alone is to be injected. Both superficial and deep peroneal nerves are exposed through the upper incision. The sural nerve is exposed through an incision 1 inch posterior to the one used for the superficial peroneal nerve alone.

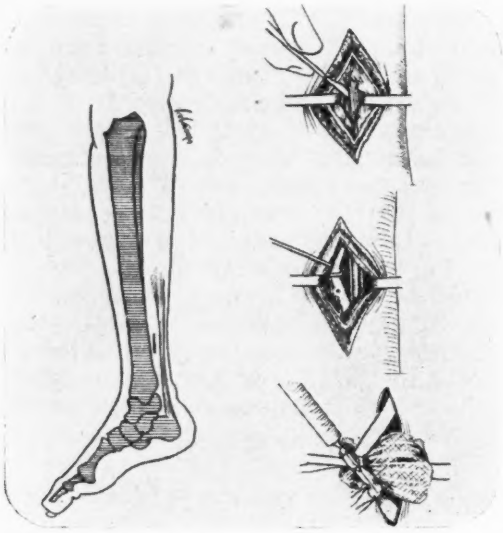

FIG. 6. Showing incision for exposing posterior tibial nerve. It is made 6 inches above the tip of the internal malleolus, just anterior to the tendo Achillis. The muscle plane between the superficial and deep muscles of the back of the leg is entered and the nerve is found lying in a sheath together with the vessels. The saphenous nerve can also be found through an incision at this same level, lying on top of the deep fascia, running along the posterior border of the tibia.

is injected, the intrinsic muscles of the sole of the foot are paralyzed, but this has never resulted in any untoward symptoms. The possibility of a trophic ulceration has to be considered. This has happened once in our series of twenty-four cases. In this instance the precipitating cause was a toe drop of the first toe, due to an alcohol injection too close to the head of the fibula, resulting in paralysis of the muscle in question.

With increasing experience, we are learning to inject as little alcohol as possible in the pos-

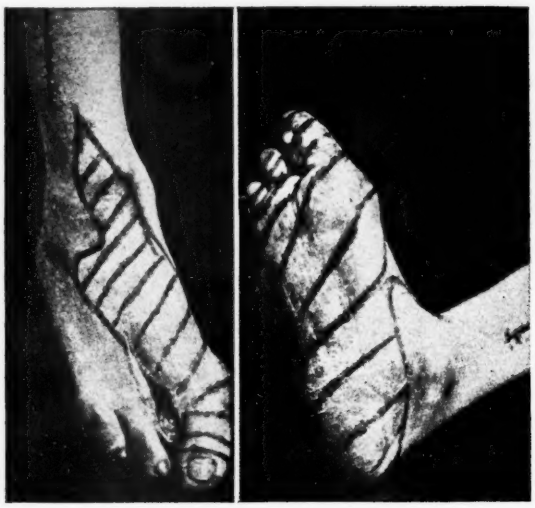

FIG. 7. *A*, Anesthesia produced by alcohol injection of anterior tibial and medial cutaneous branch of peroneal. *B*, Incision for blocking posterior tibial nerve and resultant skin anesthesia. Note that there is a narrow strip along the lateral edge of the sole and heel which is not desensitized. This is supplied by the sural nerve. Case 3—Table II.

Reprinted from *Surgery, Gynec. and Obst.*—Vol. LI, Sept., 1930.

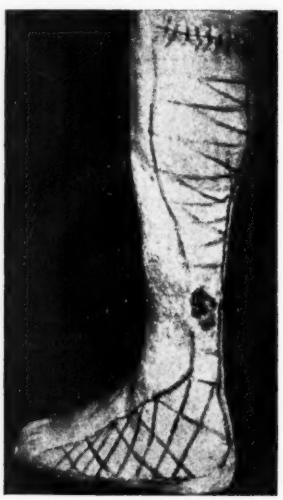

FIG. 8. To show transverse incision used to expose the two trunks which make up the sural nerve with the resultant anesthesia of the lateral aspect of the leg and foot. Case 6—Table II.

Reprinted from *Surgery, Gynec. and Obst.*—Vol. LI, Sept., 1930.

terior tibial nerve so that the anesthesia will last about four months. We are assisted in this end by injecting the alcohol into this nerve between two plain ties, placed about three-eighths of an inch apart, and tied in such a way that the diffusion of alcohol over a greater length of the nerve is minimized.

Besides stopping pain, we have been pleased to find that in many instances the alcohol injection

actually increases the circulation of the desensitized area. This we attribute to inhibition of the vasomotor element in a given case. Frequently this is quite striking. A painful extremity is often cyanotic and moist. A painless extremity is dry and of better color. This increase may amount to 10° to 15° F. If a high spinal anesthesia is given a patient with such a temperature elevation, thus completely blocking the lumbar sympathetic chain, a further rise in temperature does not follow. This demonstrates that the vasomotor fibres reach their destination along with the sensory divisions of the mixed nerves, Figure 11. Many of our good results must be due in part to this local increase in circulation.

FIG. 9. Showing position of incision to expose sural nerve with typical area of anesthesia following alcohol injection. Case 13, Table II.

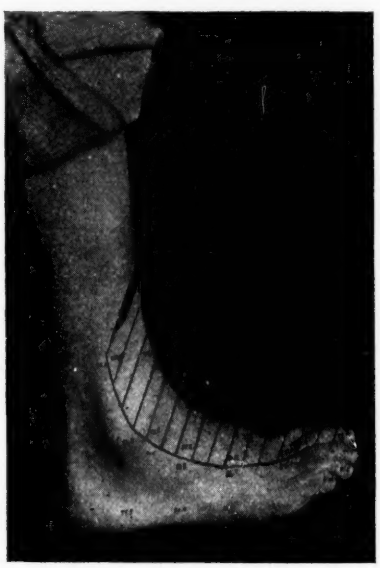

FIG. 10. Ulcer tip of 1st and 2nd toes—showing anesthesia on dorsum of foot after injection of medial division of superficial peroneal nerve and deep peroneal nerve. Note elevation of about 10° F. in surface temperature of anesthetic area. Case 14, Table II.

In Table II, a résumé of twenty-four cases is given. The end results are shown in Table III, in which the cases are classified according to diagnosis, with particular reference to the patency of main arteries. Where the popliteal artery is obliterated, we feel that only one nerve should be blocked at a time. The operations should be placed several days to a week apart. If too many small incisions are made at one time, enough of the capillary circulation may be destroyed to cause an extension of the gangrenous process.

Our major amputations were done either for serious sepsis or extensive gangrene of the foot. One patient continued to have pain after the foot was completely desensitized. The cause must be similar to that which results in pain in an extremity after it has been amputated, or it may be possible that afferent impulses are conveyed along the periarterial sympathetics and enter the peripheral nervous system proximal to the level of alcohol injection.

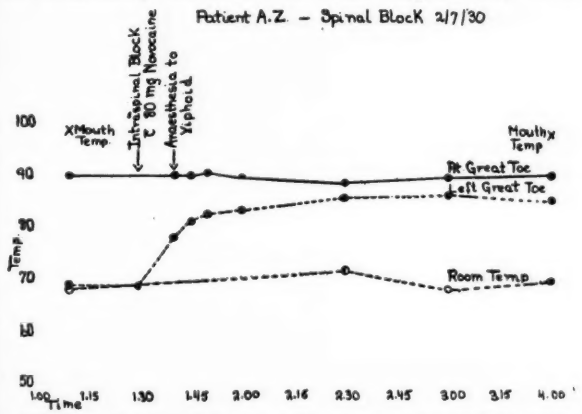

FIG. 11. Same patient as in Figure 10. After alcohol injection patient was given a high spinal anesthesia to temporarily eliminate the lumbar sympathetic influence. Note that there is no further rise in the surface temperature of the desensitized extremity, while there was a rise of 18° F. in the opposite extremity. This demonstrates that an extremity which has been desensitized by alcohol injection of sensory nerves has also been very completely sympathectomized.

SUMMARY

Alcohol injection of peripheral sensory nerves has become the most valuable aid we have in treating painful ulcerated lesions in the presence of advanced obliterative vascular disease of the lower extremity. By eliminating pain, proper dressings may be done. This reduces infection to a minimum and decreases the danger of thrombosis of the capillary circulation.

Secondarily, it results in an increased circulation to the part by inhibition of the sympathetic vasoconstrictor influence, which is marked in many cases. This causes a local rise in surface temperature.

Many advanced cases which would ordinarily be subjected to an immediate major amputation,

TABLE II

TYPES OF CASES AND RESULTS

Case	Age	Disease	Local Condition	Nerves Blocked	End Result
1	39	Thrombo-angiitis obliterans	Great toe amputated for gangrene. Sepsis and severe pain in stump.	Posterior tibial.	Slow but painless healing of disarticulated toe in 2 months.
2	36	Thrombo-angiitis obliterans	Ulceration of tip of great toe.	Cutaneous branch peroneal, posterior tibial.	Extension of sepsis into plantar fascia. Amputation 1st toe and drainage of plantar fascia. Healed in 3 months. Returned to former occupation for 1 year. Then extensive spontaneous gangrene of foot requiring Gritti-Stokes amputation.
3	36	Thrombo-angiitis obliterans	Gangrenous 2nd and 3rd toes c infection of plantar fascia.	Cutaneous branch of peroneal, anterior and posterior tibial.	Amputation of gangrenous toes c drainage of plantar fascia healed in 2 months.
4	43	Mönckeberg's sclerosis	Beginning gangrene of first 3 toes.	Cutaneous branch of peroneal and posterior tibial.	Gangrene and pain spread to anterior tibial nerve. Gritti-Stokes amputation.
5	70	Arterio-sclerotic gangrene	Threatened gangrene foot c severe pain first 3 toes.	Cutaneous branch of peroneal, anterior and posterior tibial.	Painless gangrene of foot in 10 days. Gritti-Stokes amputation.
6	70	Arterio-sclerotic gangrene	Non-healing ulcer lateral lower third of leg.	Peroneal anastomotic and external saphenous branches of sural nerve.	Ulcer healed slowly and painlessly.
7	67	Arterio-sclerotic gangrene	Ulcer 5th toe c septic joint.	Posterior tibial and cutaneous peroneal.	Relief of pain, stump toe healing slowly.
8	70	Arterio-sclerotic gangrene	Painful gangrene great toe.	Posterior tibial nerve.	Relief of pain, gangrene advanced slowly, forcing amputation.
9	62	Arterio-sclerotic gangrene	Painful gangrene 5th toe.	Posterior tibial and cutaneous peroneal.	Rapid spread of gangrene, amputation.
10	43	Thrombo-angiitis obliterans	Painful ulcer great toe.	Posterior and anterior tibials, cutaneous peroneal.	Complete relief of pain. Final amputation as ulcer did not heal.
11	37	Thrombo-angiitis obliterans	Painful ulcers dorsum of foot and great toe.	Posterior tibial, cutaneous peroneal, sural.	Pain relieved. Ulcers grafted.
12	37	Thrombo-angiitis obliterans	Gangrene great toe 5 months.	Posterior tibial, superficial peroneal.	Painless extension of gangrene and sepsis plantar fascia. Drained. Lymphangitis of leg. Disarticulation at ankle, followed by Gritti-Stokes amputation.
13	35	Thrombo-angiitis obliterans	Ulcer base 5th toe 1 month.	Sural.	Painless healing in 2 months.
14	35	Thrombo-angiitis obliterans	Ulcer tip 1st and 2nd toes 3 months.	Posterior tibial, superficial peroneal, deep peroneal.	Painless healing in 3 months.
15	45	Thrombo-angiitis obliterans	Ulcer 5th toe involving metatarsal joint—2 months.	Posterior tibial, sural.	Amputation of 5th toe and head of metatarsal. Painless healing in 3 months.
16	46	Thrombo-angiitis obliterans	Gangrene 1st, 2nd, 3rd and 4th toes —3 months.	Posterior tibial, superficial peroneal, deep peroneal.	Amputation of 5 toes. Painless healing in 4 months.
17	44	Thrombo-angiitis obliterans	Ulcer on dorsum of foot. Gangrene 2nd toe, 9 months.	Posterior tibial, superficial peroneal, deep peroneal, sural, saphenous.	Amputation of 2nd toe. Ulcer healed in 6 weeks.

TABLE II (*Concluded*)

Case	Age	Disease	Local Condition	Nerves Blocked	End Result
18	45	Thrombo-angiitis obliterans	Ulcer 2nd toe—7 months.	Posterior tibial, superficial peroneal, deep peroneal, sural.	Painless healing in 6 weeks. Trophic ulcer 1st toe in 3 months. Disarticulated—healing first intention. Regeneration of nerves in 1 year. Recurrence of pain. Reinjection of nerves *c* complete relief of pain.
19	56	Mönckeberg arterio-sclerosis	Gangrene 3rd and 4th toes *c* sepsis.	Superficial peroneal, deep peroneal, posterior tibial.	Disarticulation of toes. Extension of sepsis into leg. Gritti-Stokes amputation.
20	71	Senile arterio-sclerosis	Gangrene 1st and 2nd toes.	Superficial peroneal, deep peroneal, posterior tibial.	Painless extension of gangrene *c* Gritti-Stokes 2 months later.
21	39	Thrombo-angiitis obliterans	Gangrene 3rd toe.	Superficial peroneal, deep peroneal, posterior tibial.	Painless extension of gangrene *c* Gritti-Stokes 2 weeks later.
22	29	Thrombo-angiitis obliterans	Extensive ulcer 1st toe.	Superficial peroneal, deep peroneal, posterior tibial.	Slow painless healing in 2 months.
23	35	Thrombo-angiitis obliterans	Ulcer 2nd toe right foot.	Superficial peroneal, deep peroneal, posterior tibial.	Pain not entirely relieved although area anesthetic. Slow healing.
24	33	Thrombo-angiitis obliterans	Ulcer right great toe.	Superficial peroneal, deep peroneal, posterior tibial.	Ulcer healed in 6 weeks. One year later recurring attacks of extensive erysipelas of leg resulting in extensive gangrene of foot requiring Gritti-Stokes amputation.

can be restored to useful activity in a few months' time.

We feel that this procedure should always be tried first. It should rarely be necessary to amputate for pain. Extensive gangrene, or sepsis which endangers the life of the patient are the only two indications for a major amputation.

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TABLE III

Case No.	Arteries: Popliteal	Arteries: Dorsalis Pedis	Arteries: Posterior Tibial	Pain after Operation	Amp. of Leg	Disease
1	0	0	0	0	0	Thrombo-angiitis Obliterans
2	0	0	0	0	+§	"
3	+	0	0	0	0	"
10	+	0	0	0	+‖	"
11	0	0	0	0	0	"
12	0	0	0	0	+§	"
13	0	0	0	0	0	"
14	+	0	0	0	0	"
15	+	0	+	0	0	"
16	+	0	+	0	0	"
17	0	0	0	0	0	"
18	0	0	0	0	0	"
21	0	0	0	0	+‖	"
22	0	0	0	0	0	"
23	0	0	0	0‡	0	"
24	0	0	0	0	+‖	"
4	0	0	0	0*	+‖	Mönckeberg sclerosis
19	0	0	0	0	+§	" "
5	0	0	0	0	+‖	Arteriosclerosis
6	+	0	0	0	0	"
7	+	0	0	0	0	"
8	0	0	0	0†	+‖	"
9	0	0	0	0	+‖	"
20	0	0	0	0	+§	"

*Subsequent extension of painful gangrene into an unblocked area.
†Relief of pain complete except in unblocked area on outer side of heel.
‡The only case which has still had pain after painful area of foot completely desensitized.
§Amputation for Sepsis.
‖Amputation for Gangrene.

EXPERIENCES WITH SYMPATHETIC GANGLIONECTOMY IN PERIPHERAL CIRCULATORY DISEASE*

BY JAMES C. WHITE, M.D.†

Mr. President and Members of the New England Surgical Society:

DURING the past eighteen months there have been thirty-five ganglionectomies performed on a series of twenty-three patients by members of the Circulatory Clinic: Drs. Allen, McKittrick, Smithwick and myself, and by Dr. Mixter of the Neurological Service. In each of these cases the operation has been done to increase the circulation. I shall describe to you very briefly the historical development and technique of the operation.

Royle, in 1923, began to perform ramisectomies on a large number of cases of spastic paralysis; he deserves the credit of noting the vasodilator effect of this procedure. Figure 1 is an anatomical plate of the chest, showing the dorsal sympathetic trunk. The inferior cervical ganglion lies just above the first rib, the first dorsal just beneath it. They are usually fused and are commonly referred to as the cervico-dorsal or stellate ganglion. Royle first operated on the stellate ganglion through the neck, but by this approach it has not always been possible to cut all the sympathetic pathways to the arm. Kuntz showed that these failures were due to a ramus coming from the second dorsal ganglion, which joins the brachial plexus so deep in the chest that it cannot easily be reached by the cervical approach. It is essential to go as low as the second dorsal ganglion in order to interrupt all the sympathetic fibers to the arm. Henry, of Dublin, reported that this could be done by a posterior approach with the resection of a small piece of the first or second rib. Adson was the first to use this approach. Figure 2 is an x-ray of a patient on whom we did a dorsal operation, resecting the 1st and 2nd ribs, and putting a metal clip at the point where the stellate ganglion lay. Figure 3 shows the specimen that was removed from the patient. It is not necessary to remove any part of the cervical sympathetic trunk because the only connection between it and the spinal cord is through the communicant rami in the upper dorsal segments. Therefore, if you take out the first and second dorsal ganglia, you remove all that is necessary to insure

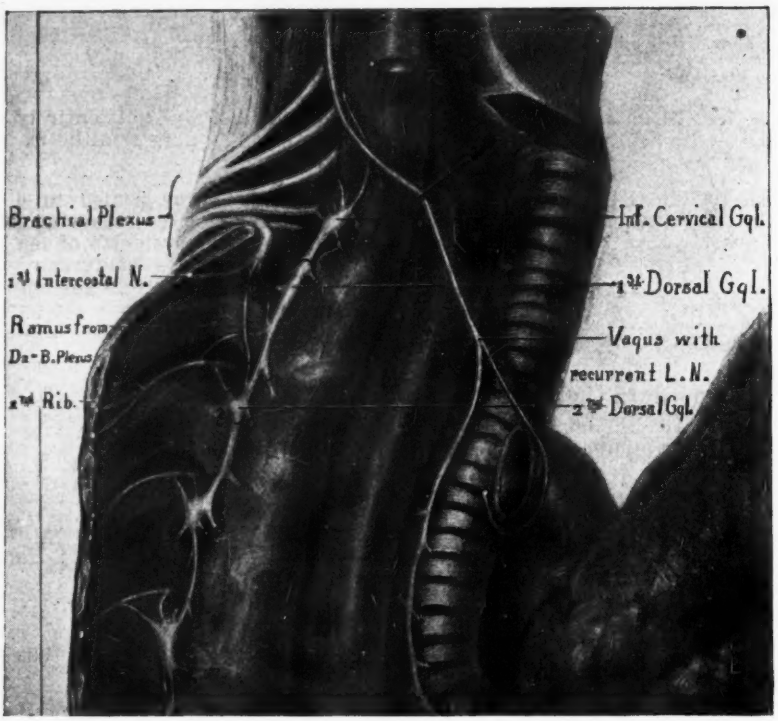

FIGURE 1. Drawing of upper thorax with parietal pleura removed. The dorsal sympathetic trunk and its ganglia are shown in detail with points at which these structures are cut at operation.
The second rib is also marked at its point of resection.

*From the Surgical Services, Massachusetts General Hospital.

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complete vasomotor paralysis of the arm. The usual operation which we have been doing consists in resecting a small piece of the second rib

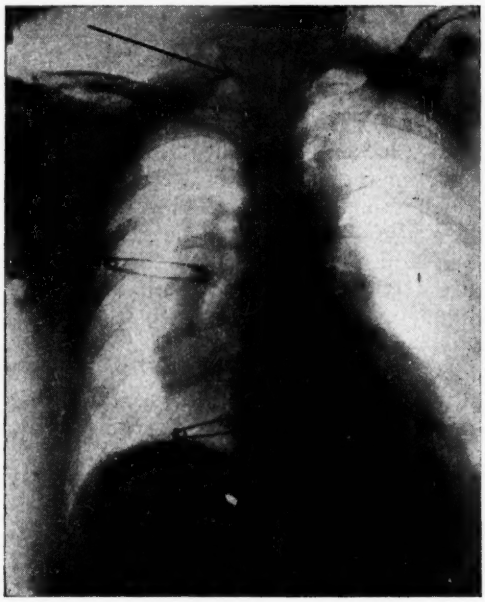


FIGURE 2. X-ray of chest after resection of posterior portion of first and second ribs and the upper two dorsal ganglia. Dural clip at point of arrow marks site of first dorsal ganglion. (A small opening was made in pleura causing a partial pneumothorax.)

posteriorly, wiping the pleura laterally, and then hooking up the sympathetic trunk, which runs in close apposition to the antero-lateral aspects of the vertebrae. We cut the chain below

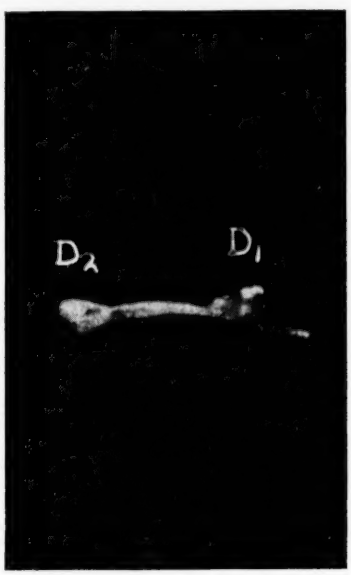


FIGURE 3. Specimen of 1st and 2nd dorsal ganglia removed at operation.

the second dorsal ganglion, then pull it down and divide it just above the first dorsal.

For the legs it is necessary to remove the lumbar chain on both sides. Through a midline incision centered at the umbilicus the caecum or sigmoid is mobilized and reflected towards the midline, exposing the vena cava or aorta down to the iliac vessels. The lumbar sympathetic chain is thus exposed, lying against the antero-

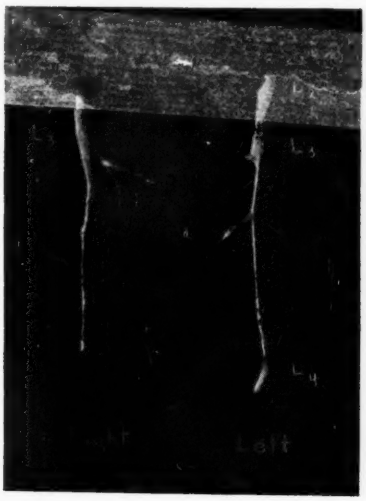


FIGURE 4. Portions of lumbar sympathetic trunk removed at operation. Rami to inferior mesenteric plexuses running medially.

lateral surface of the lumbar vertebrae. It is resected from the fourth ganglion, which lies under the iliac vessels, up to the second, just below the renal pedicle. (Figure 4.)

The purpose of this operation is to increase circulation. It is only possible to do this in

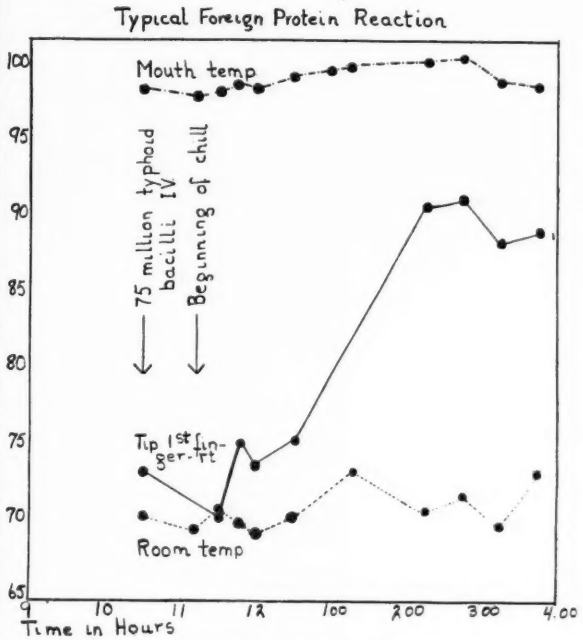


FIGURE 5. Typical reaction following injection of triple typhoid vaccine intravenously in a patient with excessive vasoconstrictor spasm.

those arterial diseases which show excessive vasomotor spasm. In such instances there is a tremendous increase in circulation after the proper ganglia have been removed. The difficulty lies

in deciding whether a given case is due solely to vasomotor spasm or whether there is arterial obliteration.

Dr. Smithwick has discussed the reaction that follows intravenous typhoid vaccine. Figure 5 is from the actual record of a patient with Raynaud's disease. The lower dotted line represents the room temperature, the continuous middle line is the skin temperature, and the upper interrupted line the mouth temperature. All readings are recorded in degrees Fahrenheit. Fifty million killed typhoid bacilli (Massachusetts State Board of Health triple typhoid vaccine) were injected intravenously at the point where the record begins. Before injection the hands were sweating and cyanotic. Examination of the capillaries at this point showed almost complete stasis. The hands were very blue, cold and painful. Then, as the temperature rose to 100.8 degrees in the mouth, it mounted to 92 degrees in the finger-tips. The hands became pink and warm, corresponding to an extremely rapid circulation in the capillaries. Such a rise of 19 degrees in the periphery with only 2 degrees by mouth is an extremely favorable response. In contrast to this a patient with a purely obliterative endarteritis would have shown little more increase in the peripheral than in the mouth temperature.

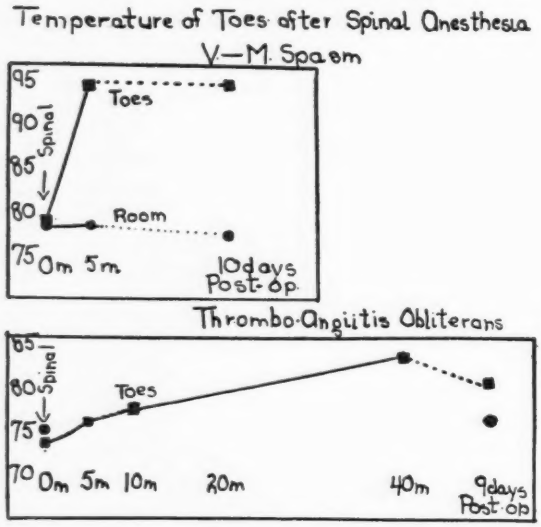
The injection of typhoid vaccine is one way of gauging the probable effect of operation, but it does not always give a good reaction even in cases that are going to respond well to operation. It is a qualitative rather than a quantitative test. A quantitative test can be made by injection of the vasomotor nerves with novocaine. This can be done by injecting the sympathetic ganglia paravertebrally, by blocking the peripheral nerves, or, in the case of the lower extremities, by spinal anaesthesia.

Figure 6A represents the skin temperature of the toes in a boy with extreme vasomotor spasm. The temperature of the toes was exactly that of the room. In a normal individual the temperature of the toes should be a good deal above that of the room—about 85 degrees in a room at 78 degrees. The patient was given spinal anaesthesia and 5 minutes later the surface temperature of the toes had gone up to 95 degrees. Ganglionectomy was performed before the anaesthesia wore off and 10 days later the temperature was exactly as predicted by the spinal test.

Figure 6B is the temperature reaction in a patient with thromboangiitis obliterans. In some cases of this disease there is a distinct vasomotor factor. It is very difficult to tell which those cases are and it is only those with an extensive element of vasomotor spasm that will do well with ganglionectomy. In this case there was a slow rise in peripheral temperature following spinal anaesthesia. After forty minutes it had gone up about 10 degrees. The patient was operated on and has maintained an adequate circulation on the operated side to date, although the unoperated side remains cold and on the verge of gangrene.

Figure 7 shows the result in an arm injection. This patient had Raynaud's disease. Note that the temperature of the fingers was below that of the room. The first and second dorsal ganglia were blocked by injecting novocaine beneath the two upper ribs and the temperature began to rise in 15 minutes. It rose to 95 degrees and remained markedly elevated for two hours. Some of the novocaine got around to the other side

FIGURES 6A AND 6B.*



Abolition of vasomotor spasm by spinal anaesthesia 6a. Rapid rise in temperature in patient with excessive vasoconstrictor tone.

Slow rise in temperature in patient with thromboangiitis obliterans. The 10 degree rise in peripheral temperature denotes a considerable element of vasomotor spasm superimposed on the mechanically occluded arteries.

*This figure was previously published by Dr. J. C. White in an article entitled "Diagnostic Novocaine Block of the Sensory and Sympathetic Nerves" which appeared in the August 1930 issue of the *American Journal of Surgery*.

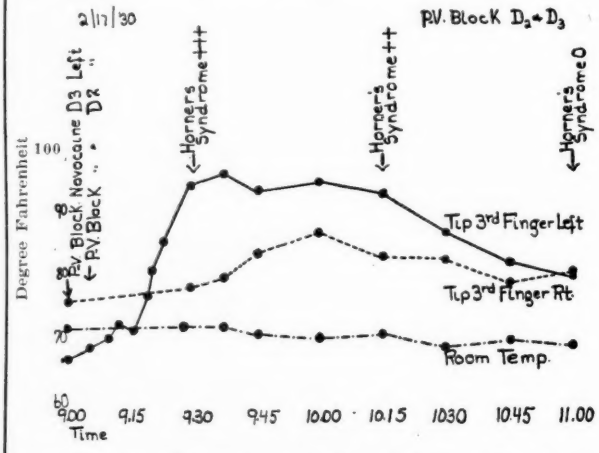


FIGURE 7.* Temperature reaction of fingers after paravertebral novocaine injection of upper dorsal ganglia in patient with excessive vasoconstrictor tone.

*This figure was previously published by Dr. J. C. White in an article entitled "Diagnostic Novocaine Block of the Sensory and Sympathetic Nerves" which appeared in the August 1930 issue of the *American Journal of Surgery*.

and the temperature of the other arm also went up a bit.

Figure 8 shows that the test can also be performed by injecting the peripheral nerves. Here is a patient who had fractured his first lumbar vertebra. He had developed cold, cyanotic, ulcerated feet. It was essential to find out if his peripheral temperature would go up with ganglionectomy. On account of a spinal fusion the spinal anaesthesia test could not be performed, but it was still possible to block the vasomotor fibers to the toes by injecting the sciatic nerve. The room temperature was 76 degrees, while the temperature of his toes was 8 degrees colder, due to the evaporation of profuse perspiration. In the course of the hour following the sciatic injection, the skin temperature of the toes went up from 68 degrees to 96 degrees, showing that operation would give a maximum increase in circulation. The patient has now had a lumbar ganglionectomy and maintains a temperature of over 90 degrees at the end of 6 months.

The accompanying tables summarize the results of 35 operations. I want to tell you about

NOVOCAINE BLOCK OF SCIATIC NERVE (Pt. F. G.).

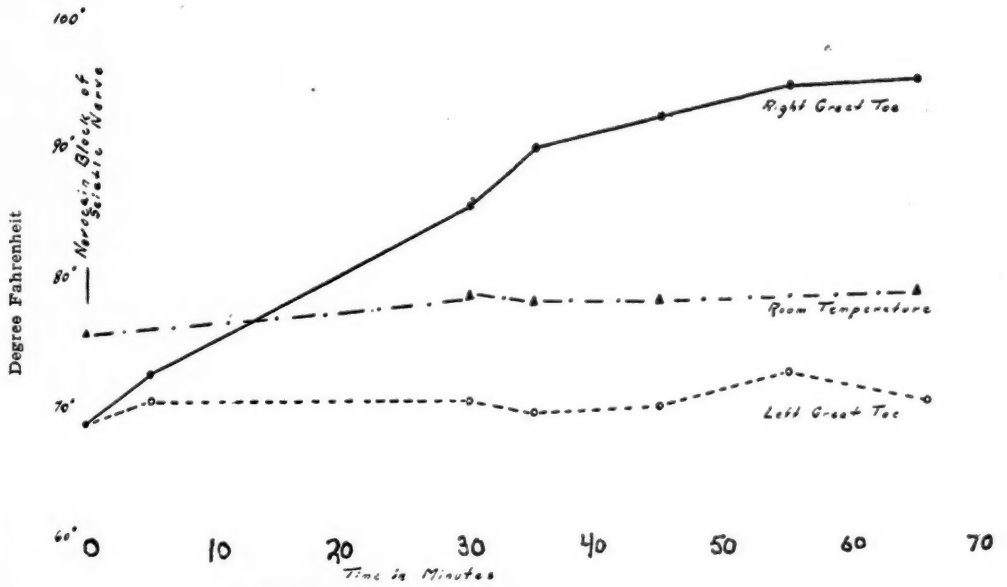


FIGURE 8.* Elevation in surface temperature of the 1st toe following novocaine block of the sciatic nerve. Case 23.

*This figure was previously published by Dr. J. C. White in an article entitled "Diagnostic Novocaine Block of the Sensory and Sympathetic Nerves" which appeared in the August 1930 issue of the *American Journal of Surgery*.

TABLE I

SEVERE INTERMITTENT ATTACKS OF VASOMOTOR SPASM—RAYNAUD'S DISEASE

Case	Reason for Operating	Operation Dorsal or Lumbar	Side	Temperature Increase Immediate	Temperature Increase Late	Healing of Skin Lesions	Relief of Pain	Effect on Vasomotor Spasm	Observation Months
1	Gangrene of fingers	Dorsal	L	19° →	?*	Yes	Yes	Complete	22
2	Ulceration of feet	Lumbar	R	20° →	14°	Partial	Yes	Slight residue	8
			L	14° →	9°				
	Gangrene of fingers	Dorsal	R	20° →	10°	Yes	Yes	Complete	1
			L	14° →	8°				
3	Cold hands	Dorsal	R	22° →	19°	—	Yes	Complete	5
4	Gangrene of fingers	Dorsal	R & L	15° →	15°†	Yes	Yes	Complete	5

*No recent temperature reading, but left hand remains much warmer than right.
†The 3rd and 4th fingers, which showed the greatest scarring and atrophy of the skin before operation, are free of vasomotor spasm and symptoms, but are distinctly colder than the other digits.

some of these cases in detail, but in order to be brief I can only pick a few of the most typical ones.

Raynaud described the disease that bears his name as a condition of intermittent crises of vasomotor spasm causing painful blanching of the fingers and toes, then congestion and cyanosis, and eventually, normal circulation again. (Table 1.) There are also a good many people who have constant vasomotor spasm with cold, clammy, cyanotic extremities. In the severe forms these patients never regain a normal circulation and they are subject to a great variety of trophic disturbances. We have separated these into a distinct group. (Table II).

CASE 1 was a girl of fourteen years with intermittent, intense, white spasms of the fingers. Due to her impoverished circulation, she developed a slowly advancing, dry gangrene of the fingers so that her left hand looked like a bird's claw. (Figure 9.) We did a left-sided ganglionectomy on her

FIGURE 9. Terminal atrophy and necrosis of fingers in advanced case of Raynaud's disease. Case I.

22 months ago and amputated the tips of 2 gangrenous fingers. As she lives in Vermont, there has been no opportunity to see her recently, but we have heard by letter that her temperature is still up and that her hand, even in extreme cold, only gets slightly chilled. She has had no further trouble with that hand, but she will probably have to have a similar operation for the other side.

CASE 2, a woman of 46, suffered from painful crises in all 4 extremities. She had threatened gangrene of 2 toes, extensive ulceration of the feet, and gangrene of the 4th and 5th finger-tips of her right hand. (Figure 10.) We have been forced to

FIGURE 10. Hands and feet in Case II. Further example of advanced Raynaud's disease.

do ganglionectomies on all four of her extremities. The temperature of the right foot was elevated 20 degrees. It is still up 14 degrees, 8 months after the operation. The left foot remains elevated 9 degrees and the hands 10 and 8 degrees. I do not regard this as a very successful case. The patient still has a little ulceration in her feet, although her hands are all right. In most of these cases the temperature has been maintained much better. Adson and Brown claim that people with Raynaud's disease who have had extensive ulceration of long duration get a superimposed fibrosis in the terminal vessels. We are beginning to feel the same way and to realize that we cannot get as good results with these patients as with the ones who are operated on early.

TABLE II

CONTINUOUS VASOMOTOR SPASM CAUSING OR AGGRAVATING A VARIETY OF TROPHIC DISTURBANCES IN THE EXTREMITIES

Case	Reason for Operating	Operation Dorsal or Lumbar	Operation Side	Temperature Increase Immed.	Temperature Increase Late	Healing of Skin Lesions	Relief of Pain	Increased Mobility	Observation Months
5	Cold, painful feet	Lumbar	R & L	20°	→ 16°	—	Incomplete	—	16
6	Posttraumatic pain and swelling of knee	Lumbar	R	22°	→ 0°				
			& L	22°	→ 18°	—	Yes	—	15
7	Tuberculide of feet	Lumbar	R & L	22°	→ 21°	Yes	Yes	—	10
8	Fibrosis of fingers following sepsis	Dorsal	R	17°	→ 15°	—	—	No	6
			& L	17°	→ 5°				
9	Scleroderma	Dorsal	R	12°	→ 5°	—	Slight	Slight	6
10	Scleroderma	Dorsal	R	17°	→ 19°	—	Yes	Yes	4
11	Scleroderma; prog. muscular atrophy	Dorsal	R	18°	→ 18°	—	—	Yes	4
12	Varicose ulcer	Lumbar	L	—	—	—	—	—	Died 2 days
13	Arthritis	Dorsal	R	10°	→ 10°	—	No	No	10
14	Arthritis	Dorsal	R	17°	→ 21°	—	No	No	10

CASE 3, a girl of 19, was operated on before she had any definite gangrene. Both her hands had become cyanotic and at times white. The temperature of her finger-tips was about 70 degrees when the room was 72. Following a right-sided ganglionectomy, the temperature on the operated side rose 22 degrees. Now, at the end of five months, it has fallen only 3 degrees and this hand is quite normal in appearance. The other hand remains strikingly blue, cold and moist.

Table II. These are patients who have constantly impoverished circulation of an extreme degree. Everyone knows a certain number of people who have cold, clammy hands and feet. Very often this is only a minor inconvenience, but in some of these cases all sorts of secondary troubles develop. For instance, patient No. 6 had noticed cold feet for years; but when she struck her knee, she developed a traumatic arthritis with aching pain and edema of her leg, which dragged on for 3 months in spite of all forms of treatment. When her leg was warmed up, the symptoms disappeared. As both legs were equally cold, we did a bilateral operation. For some unexplained reason the right side failed to stay warm, but it was luckily the left side that had the traumatic arthritis.

CASE 7, a woman of 26, had had extremely cold feet as long as she could remember, with tuberculous ulcerations of the skin above the ankles for 8 years. She had been in a sanatorium for 6 months and the ulcers had healed, but the minute she started to work again, the ulcers all broke down. She was operated on 10 months ago. The temperature is still up 21 degrees. The ulcers have remained completely healed, although she has been at work ever since.

CASE 8 is a patient with a peculiar scleroderma-like fibrosis of her two index fingers following sepsis. Antedating this for years she had had extremely cold hands. Dorsal ganglionectomy has kept the right hand warm and comfortable for 6 months. The left hand is not so completely successful, but it never gets as cold as it used to. She is very glad she had the operation, although fibrosis had gone so far that motility of these fingers has not increased.

The next 3 patients had typical scleroderma. Leriche, Adson, and others have come to the conclusion that in favorable cases, where there is a distinct element of vasomotor spasm, early restoration of the circulation by ganglionectomy can arrest the advance of the disease and increase the mobility of the affected areas. In case 9 the operation was apparently not done early enough. In patient 10 there was much less advanced fibrosis. The circulation has been markedly improved, with a distinct diminution in stiffness of the fingers and increasing mobility of the skin in the hands.

In CASE 11 operation has given a most striking result. This patient is a young woman of 31 with severe vasomotor spasm of the hands, early scleroderma of the face and arms, and a progressive muscular atrophy over the same regions. In the 4 months following a right-sided operation, her temperature has stayed way up and the mobility of the fingers has greatly increased. She can now sew and do her housework. Furthermore, the strength of the muscles in her arm and shoulder has increased definitely and this general improvement has given her an entirely different outlook on life. We are watching with the greatest interest to see how far this striking improvement can continue.

CASE 12, a boy of 18, had large, sluggish varicose-like ulcers without definite varicose veins. Neither rest in bed, stimulating applications, nor excision and skin grafting could heal it. As a last resort, in order to increase circulation and stimulate healing, a lumbar ganglionectomy was performed on his left side. Streptococcus septicemia set in. The day after the operation his temperature was 104° and he died within 48 hours. We realize now that no lumbar ganglionectomy should ever be undertaken in the presence of any lesion in the lower extremities, unless the presence of streptococci has been rigidly excluded by frequent cultures. Autopsy showed that an infection had spread from the lumbar lymphatics, which lie beside the sympathetic chain and are always opened during this operation.

We have performed two dorsal ganglionectomies for severe periarticular arthritis of the wrists and hands, as recommended by Adson. The first, a young woman of 24, had such wringing wet cold hands that, as she stated, "they felt like a pair of dead fish". When she became excited, the drops of perspiration dripped off her finger tips. Both the foreign protein and novocaine tests gave an excellent response. The second, a boy of 20, closely resembled her, except that he showed less intense sweating and vascular spasm of the hands. In both cases unilateral excision of the first and second dorsal ganglia was carried out ten months ago. Much to our disappointment, neither patient has improved a bit so far as joint stiffness or pain is concerned; but both are glad to have warm, dry hands instead of cold, wringing wet ones.

There are two patients in our series with thromboangiitis obliterans. (See Table III.) In certain cases of this disease there is a definite element of vasomotor spasm superimposed on the obliterated arteries. This was proved in these cases both by the reaction to intravenous foreign protein and to novocaine injected intraspinally. Case 15 had the 2nd, 3rd and 4th lumbar ganglia resected only on the worse side. This

TABLE III

THROMBOANGIITIS OBLITERANS WITH SUPERIMPOSED VASOMOTOR SPASM

Case	Reason for Operation	Operation		Temperature Increase		Healing of Skin Lesions	Relief of Pain	Decrease in Cyanosis	Observation Months
		Dorsal or Lumbar	Side	Immed.	Late				
15	Gangrene	Lumbar	L	8°	→ 8°	Yes	—	Yes	15
16	Gangrene	Lumbar	R & L	11°	→ ?	Slow	No	No	4

leg is now normally warm and gives the patient no trouble at all, whereas on the other side he has a very cold foot with the beginning of ulceration in the 4th and 5th toes.

CASE 16 had a bilateral lumbar ganglionectomy performed for Buerger's disease with extremely painful ulceration of the toes of both feet. In spite of the fact that the toes showed the increase in temperature predicted by the novocaine test, there was no immediate effect on the painful ulcerations. These have subsequently healed, but too slowly to feel that the improvement was due to the operation.

Finally, there remains one other circulatory condition which can be benefited by ganglionectomy and which, to the best of my knowledge, has not been reported from other clinics. This is made up of patients with old spinal lesions causing paralysis of the legs. Table IV shows, first, a group of 6 young adults who had had poliomyelitis in childhood. With the atrophy of the paralyzed lower extremities all of these patients had developed a pronounced circulatory deficiency marked by cyanosis, coldness and ulcerations of the skin of the lower legs and feet. The coldness and ulceration in these patients had been one of the causes of long suffering.

TABLE IV

CORD LESIONS CAUSING CIRCULATORY DEFICIENCY IN THE LEGS

Case	Reason for Operating	Operation		Result: Temperature Increase Early	Late	Result: Healing of Skin Lesions	Result: Relief of Cyanosis	Result: Degree of Paralysis*	Observation Months
				Poliomyelitis					
17	Cold cyanotic leg	Lumbar	R	18° →	8°	—	Partial	2	14
18	Cold cyanotic leg	Lumbar	L	20° →	0°	—	No	3	18
19	Cold cyanotic leg	Lumbar	L	23° →	5°	—	Partial	2	18
20	Traumatic ulcer sole of foot	Lumbar	R & L	23° →	22°	Yes	Yes	1	14
21	Ulceration of calf; cold and cyanotic	Lumbar	L	23° →	3°	No	No	3	10
22	Ulceration of feet; cold and cyanotic	Lumbar	R & L	24° →	5°	Yes	Yes	4	5
				Fracture of 1st lumbar vertebra with cord injury					
23	Threatened gangrene	Lumbar	R & L	24° →	20°	Yes	Yes	3	6

*Paralysis graded numerically; 1 slight degree, 4 complete.

Dr. R. H. Smithwick demonstrated that the peripheral circulation in these cases responded well to foreign protein shock and Dr. J. W. Mixter then showed that lumbar ganglionectomy would cause the feet to become warm again and the ulcerations to heal. This has occurred in every case, but, unlike the other groups of cases reported above, where the initial increase in circulation has been well maintained, half of these patients have sunk back to their previous low level. We do not know the reason for these failures, except that they have always taken place in the cases with almost total paralysis. It is not due to a failure to remove the proper sympathetic vasoconstrictor pathways or to their regeneration, because there has been a total and permanent abolition of sweating and it is known that the sympathetic fibers to the sweat glands run with the vasoconstrictor nerves. My conjecture would be that, even when the arteries are dilated to their maximum, an active circulation cannot be maintained in a flail foot due to the failure of muscular compression as a factor in emptying the veins and to the greatly reduced metabolism in the paralyzed muscles.

CASE 23, the last patient in Table IV, had a spastic paralysis of the legs due to a fractured first lumbar vertebra with a cord compression. The beneficial effects on circulation following Royle's operation for spastic paralysis have been known since 1923. Here the temperatures of the feet were reduced to 69 degrees, 8 degrees below room temperature (due to evaporation of a very profuse perspiration). The deeply cyanotic, ulcerated feet were on the verge of gangrene. Diagnostic blocking of the patient's sciatic nerve with novocaine (Figure 8), showed that this condition could be relieved by lumbar ganglionectomy. Operation was performed and his feet at the end of six months remain normal in color, dry, hot and free from ulceration. The spasticity, which was slight, shows no noticeable change.

CONCLUSIONS

This brief résumé of our series of sympathetic ganglionectomies for circulatory disease has been presented in the hope that it will bring out the effectiveness of this procedure in certain favorable cases and its limitation in others. It is obvious that it is the specific cure for the early case of Raynaud's disease; for the advanced case where there has been prolonged ulceration and fibrosis, operation will arrest the progress of the disease, although permanent trophic changes may have taken place which cannot clear up even after the elimination of all vasomotor spasm.

In the second group of cases which show a constant state of vasomotor hyperactivity, a restoration of normal circulation usually prevents the advance or causes a regression in the crippling atrophic changes which often accompany this condition. Beneficial results are reported above in patients with scleroderma, erythema induration, traumatic arthritis, and also in the improvement of the accompanying pain in the extremities. The only distinctly disappointing findings were in the cases of periarticular arthritis, but these are insufficient evidence on which to base an adverse opinion in the face of Adson's successful reports.

Poor circulation and ulceration of the feet secondary to paralysis from spinal cord lesions may also be benefited by ganglionectomy, but the results have not been so uniformly successful as in the preceding groups.

Our results in two cases of thromboangiitis obliterans are too uncertain to derive any definite conclusions from them.

In closing, let me emphasize again the importance of a most careful selection of patients for operation. Operation should not be performed on patients in whom there is not a very definite increase of peripheral circulation following the intravenous injection of typhoid vaccine or after diagnostic novocaine block. It is not justifiable to undertake such a radical procedure on poor operative risks, nor should it be attempted on patients with infected ulcerations, until it has been proved that these lesions are free from virulent streptococci. With these criteria in mind and an increase in clinical experience, there should be but few failures and the minimum operative risk in the resection of the vasomotor pathways to the extremities.

THE GENERAL MANAGEMENT OF CIRCULATORY DISORDERS OF THE EXTREMITIES*

BY ARTHUR W. ALLEN, M.D.†

DURING recent years many problems confronting the general surgeon have been worked out in such a way that we have a clear-cut idea, when a patient is presented, as to the best measures to be adapted towards the relief of his particular malady. This has been brought about either through the more common occurrence of some pathological conditions, or the incompatibility of such lesions with life and health. I believe it will be generally conceded that circulatory disorders of the extremities do not fall into the above-mentioned group. In the hope that we might improve the results obtained in the treatment of such cases and standardize our present knowledge along these lines, we have been given the privilege of studying them under a special assignment. This has led to the development of a Peripheral Circulatory Clinic in our hospital. We have attempted to correlate the various procedures advocated elsewhere and those developed by our own group; also to standardize and adapt these measures to the particular needs of our hospital. I am perfectly well aware that our routine measures are not adaptable to all clinics or to some individual private patients, but it is with the hope that a better understanding of the problem in general may be had, and helpful discussion stimulated that the general management of such cases, as we use it today, is herein presented.

The majority of individuals suffering from disorders of the peripheral circulation seek medical aid long before major amputation is the only obvious line of procedure. This is due to the insidious onset of the disease and to the long period of time between the first symptoms and the beginning of disability. The main arterial channels become gradually occluded, in some instances so slowly that collateral circulation develops to such an extent that disability does not occur. Usually, however, some intervening trauma, such as the paring of neglected calluses or an ill-advised operation for ingrowing toenail, precipitates disability in the form of a painful ulceration that fails to respond to the usual methods of treatment. Frequently it is not until such a phase is reached that the physician and the patient realize that there is an underlying factor of greater importance than the local lesion. A great many of these cases, having as their first indication of trouble, intermittent cramp-like pains in the sole of the foot, seek relief for fallen arches. It behooves the general practitioner, the orthopedic specialist, the general surgeon, and the chiropodist to be on the alert for deficient circulation in any painful extremity.

CLASSIFICATION AND DIFFERENTIAL DIAGNOSIS

The differential diagnosis in these cases is not always easy, nor, from a standpoint of general treatment, is a diagnosis always necessary. Most of them have much in common, regardless of age, sex, nationality, or type of arterial obliteration. Intermittent cramp-like pain in the foot or calf of the leg on walking, inability to sleep, localized pain, and lowered tolerance for cold are symptoms common to all varieties of the disease. On examination, the arteries are

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either firm, with calcium deposit, or are not pulsating; the extremity is cold to touch; it blanches readily on elevation and becomes cyanotic on dependency. In many there is ulceration or early gangrene present; some have definite trophic changes. For simplicity we differentiate the vasomotor disorders from those with arterial occlusion. We find these conditions overlapping somewhat, but usually factors are present to classify them to that extent.

The Primary Vasomotor Disorders are commonly spoken of as Raynaud's disease. The chief characteristics are youth, the female sex, bilateral involvement of the upper extremities, and intermittent multiple phase color changes, with comparative normalcy between attacks. There is an increase in periodicity and severity in cold weather, and a history of long-standing trouble, usually occurring in individuals of unstable nervous system. Their peripheral vessels pulsate normally and do not show calcium deposit by x-ray. Through increasing periods of vasoconstriction, trophic changes in the tips of the fingers, sclerosis of the involved skin and soft parts, and in some cases actual gangrene takes place. There is another type of vasomotor imbalance which is more "constant" in character than the "phasic" variety just described. This may be a late development of the intermittent disease, but we have not always been able to illicit any history of periodicity in these cases. Their chief complaints are tightening of the soft tissue over the digits, loss of sensation, inability to stand cold, and ulcerations which fail to heal. As a whole, the constant vasomotor disorders appear in individuals nearer middle life.

LESIONS OF THE EXTREMITY DUE TO ARTERIAL OCCLUSION

(a.) *Senile arteriosclerosis.* Here we have a large group of individuals, ranging in age from forty to ninety, the average age in our cases being sixty. We find it in both sexes, of all nationalities. The duration of symptoms is short, usually a matter of months, the lower extremities being always involved. Always one leg is affected more severely at a time. The vessels are sclerotic to palpation, show by x-ray, but may pulsate rather well. Gangrene or ulceration comes on early or not at all, and collateral circulation develops well.

(b.) *Thromboangiitis obliterans* occurs in comparatively young men, of all nations, although there does seem to be some predilection for the Hebrew race. It is characterized by symptoms of long-standing, nearly always involving one lower extremity first. It progresses slowly and gradually, usually involving the other foot and frequently each hand in turn. The vessels do not pulsate and do not show by x-ray. There is a marked tendency to development of collateral circulation and eventual relief. Pain is a very prominent symptom, frequently producing sleepless nights, malnutrition, and an excess indulgence in tobacco, alcohol, and drugs. Ulcerations remain stationary for months and gangrene spreads slowly.

(c.) *Mönckeberg's arteriosclerosis* is difficult to differentiate from thromboangiitis obliterans clinically. This disease comes, as a rule, a little later in life, is of shorter duration, and responds less well to treatment. The diagnosis is frequently not made until a section of the artery is seen under the microscope.

TREATMENT

The special forms of treatment of vascular lesions of the extremities have been well put forth in the foregoing papers and elsewhere. As can be seen, cases suited to alcohol injection of peripheral nerves, sympathetic neurectomy, and nonspecific foreign protein must be well selected. These procedures are certainly not well adapted to routine measures, except under the most careful study and supervision. The results obtained in many instances are indeed remarkable and represent progress. I wish, however, to warn against a casual interest in such matters, and hope that the results obtained by less drastic procedures in some cases may not be overlooked. Each case of this group admitted to the ward is subjected to certain routine procedures, as follows:

ROUTINE STUDY FOR CASES OF PERIPHERAL CIRCULATORY DISORDERS

1. Duration of symptoms: when intermittent claudication began, when and how ulceration started, etc.
2. Date and character of injury, if any. Date of ulceration or gangrene. Date disability began.
3. Extent of infection, lymphangitis, ulceration and gangrene.
4. Description of lesion and vessels. Indicate volume of pulse in vessels, one plus to four plus.
5. Length of time for blanching to occur on elevation, and cyanosis on dependency.
6. Surface temperatures of extremities.
7. Oscillometer readings.
8. X-rays of vessels of extremities.
9. Photographs of lesions.
10. Degree of pain, i.e., constant, at night only, on change of position, use, etc.
11. Blood sugar in all diabetics.
    All diabetics and all infections are to be considered as emergencies.
    Blood cultures on cases with marked infection.
    Cultures of infected lesions.

After this has been accomplished, or during the examination, in fact, the following routine is carried out:

ROUTINE TREATMENT FOR CASES OF PERIPHERAL CIRCULATORY DISORDERS

1. Bed with Balkan frame. Extremities elevated on pillow—heels off mattress.
2. Cradle with electric lights in winter, without lights in summer.
3. Daily foot hygiene (careful application of soap solution followed by alcohol and lanolin).
4. Refer to the Podiatry Clinic (notify Doctor Kelley on bed patients).

5. Open lesions treated with Dakin's solution throughout the day. Those not badly infected treated with boric ointment at night.
6. For pain—aspirin, barbituric compounds.
7. Buerger exercises. Position I—from one-half to two minutes, depending on time blanching occurs. Position 2—from one to three minutes, depending on cyanosis or severe pain. During each Position 2, have patient dorsiflex, plantarflex, invert, evert, flex toes, extend toes once. Position 3—five minutes, feet wrapped in warm woolen blanket on hot water bottle or electric pad, or under electric cradle—the extremities to be level with the trunk.
8. Force fluids to four quarts a day. Liberal diet.

We have been so impressed with the benefits arising from these routine measures alone that specific treatment is not advised until progress is at a standstill, or at least has reached a level at which an adequate understanding of the case is assured. Many cases respond so well to these general measures that specific treatment is unnecessary. For this reason, I wish to stress them particularly, and to present in detail our modification of Buerger's postural exercises, as we feel that these do more to aid in the rapid development of the collateral circulation than any other one factor.

POSITION 1—SEE FIGURE I

The elevation of the extremities at 45° allows the blood to drain from the extremities and should not last longer than it takes to completely blanch the feet. This varies somewhat, but a routine of two minutes in this position is usually adequate and safe. This can be carried out with several pillows, but the hinged board described by McKittrick & Root in their *Diabetic Surgery*, and shown in the illustration, is a great aid to the nursing staff.

POSITION 2—SEE FIGURE II

This should be carried out immediately following Position I, the patient sitting on the edge of the bed with his feet hanging down. This allows a charge of freshly oxygenated blood to flow into the feet, and should last until cyanosis or severe pain takes place—usually from one to three minutes. During each Position 2, it is well to routinely have the patient forcibly dorsiflex, plantarflex, evert, invert the feet, extend and flex the toes once. This serves a double purpose; it makes it possible to assume the position longer and keep the joints and ligaments active.

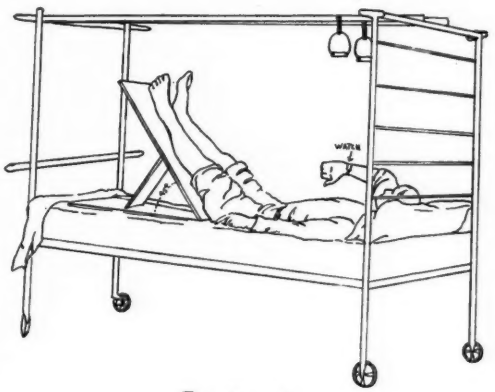

FIG. I.

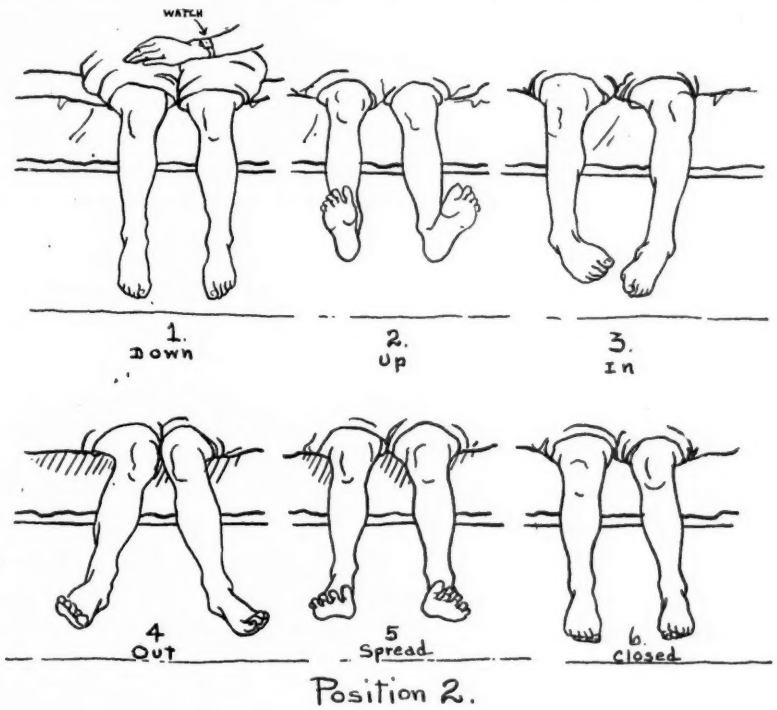

FIG. II.

POSITION 3—SEE FIGURE III

Immediately after Position 2 there follows a rest period of five minutes with the extremities wrapped in a blanket, warmed by an electric

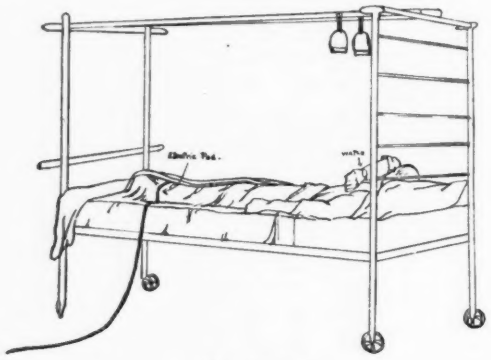

FIG. III.

pad. This gives the deficient tissues the full benefit of the fresh blood carried into them by Position 2.

These exercises should be carried out accurately, a timepiece nearby. The patient should not read during them as accuracy seems fairly important. The three exercises should be repeated from three to six times at a session and there should be from two to four such sessions daily. Inasmuch as the average hospital stay has been something over thirty days for our patients, the routine can be firmly established and then carried out at home without supervision.

Amputations—Since we are not always successful in getting these patients early in their disease and at times fail to impede the development of gangrene or infection, we are sometimes forced to resort to amputation. In cases of diabetic gangrene with advancing lymphangitis, we frequently have a positive blood stream infection, but even if the blood culture is negative, we do not dare to close a few of these stumps. Dr. McKittrick has saved lives and made it possible to reamputate later, getting an end-bearing Gritti-Stokes or low tendino-plastic thigh stump by doing a guillotine below the knee as an emergency procedure. I cannot recommend this operation too highly in suitable cases. When the element of infection is not paramount, we believe that the Gritti-Stokes amputation is usually the one of choice. These patients are fitted with a temporary appliance before leaving the hospital, and can begin to walk in from three to six weeks after operation. The usefulness of this procedure in the laboring man cannot be overemphasized. We see many patients with point of election amputation for circulatory disorders, who spend many weeks out of each year keeping their stumps free from ulceration.

Restoration of Function—After these patients have been in bed or in a wheel chair for a long period of time with their extremities elevated, it is very important that they should be gradually accustomed to the upright position. If they are not, the burden of the return flow of blood and lymph will be too much for the newly healed tissues, or even for an opposite foot that may have appeared quite normal. We advise beginning weight-bearing for one minute out of the hour, gradually increasing this as the circulation becomes adjusted. The patient should not be discharged until he can walk for five minutes at a time without cyanosis and swelling. Many good results have been spoiled by overlooking this simple procedure. It is not necessary to keep patients in bed or in a wheel chair until ulcerations are completely healed. There comes a time in many cases when walking stimulates healing. This must be done under careful supervision and not left to the judgment of the patient.

Embolectomy—Before closing I wish to call attention to the possibilities of restoring the circulation to the extremities in a most dramatic manner. I refer to arterial embolectomy. Successful cases are increasing in number and every surgeon should be eager to add his own efforts to this field. Sudden occlusion of an artery in the extremity by embolus is very apt to occur while the patient is in the hospital recovering from a decompensated heart. Without proof, it seems probable to me that the sudden digitalization of a fibrillating heart often causes a thrombus to be dislodged from the heart into the peripheral circulation. The suddenness of the onset, the very severe type of pain, the accompanying shock to the patient, and the appearance of the extremity make the diagnosis easy in many cases. Doubtful cases should not be operated upon. The operation is simple and if done early, the results are gratifying. If done under local or spinal anaesthesia, there is nothing to lose and much to gain. We believe that approximately twenty-five per cent. of such operations should be entirely successful.

PRESIDENT CHEEVER: So much that has been discussed represents new work, blocking out advances in surgery, that I think one of the points that ought to impress us very much in the presentation of these papers, especially in Dr. Allen's summary, is the conservatism shown; that is, when these men are able by these operative procedures to accomplish such remarkable results, I think it is a great temptation to recommend them more universally, and I am very much impressed by their attitude of conservatism.

Dr. Charles Lund has a patient here and we would like to invite him to speak about his case.

ILIAC EMBOLISM WITH ACUTE CARDIAC DECOMPENSATION*

BY CHARLES C. LUND, M.D.†

R. S. (Boston City Hospital No. 611952), aged 34, white, married, was admitted to the Fourth Medical Service June 6, 1930, with diagnoses of chronic rheumatic heart disease, mitral stenosis, auricular fibrillation, decompensation and rheumatic fever.

P. I. Three weeks ago, the patient developed a "sore throat" with fever, lasting one week. As this improved, several joints became sore, slightly red and swollen: in order, the right elbow, both wrists, knees, ankles and shoulders. Pain in them has persisted. Four days ago, a non-productive cough developed, with pain across the chest and right flank. Two days ago, "warm urination", frequency, and nocturia began. She had a chill last night and had had no known fever until after this. She had been moderately dyspnoeic for the last two days, but without orthopnoea. There was slight swelling of the ankles. She had had no digitalis.

P. H. She had "rheumatism" at fifteen years of age, when she was in a hospital for six weeks. She has known she had some damage to the heart, but has had no symptoms until the present illness. She has not usually been subject to sore throat. Otherwise her past history was essentially negative.

M. H. Her husband and two children were living and well. She had one miscarriage at three months.

F. H. Unimportant.

P. E. showed a fairly well-developed and nourished young woman lying quietly, propped up in bed, breathing somewhat rapid and slightly labored, but not cyanotic.

Heart: L. B. D. 12 cm. R. B. D. 3 cm. S. C. D. 4 cm. Markedly enlarged, sounds totally irregular. Loud systolic and short diastolic murmur at apex. P 2 accentuated and greater than A 2. Pulse 130-150. Pulse deficit 24. Blood pressure 140/80.

Lungs: Few crackles at both bases. Otherwise negative.

Abdomen: Liver three fingers below right costal margin in nipple line. Tender. Slight tenderness in right costo-vertebral angle.

Extremities: Slight tenderness of shoulders, knees and ankles, without redness, heat, or swelling. Moderate tenderness right elbow with slight redness and no swelling. Slight oedema of both ankles.

Laboratory Findings:

June 7, Urine—Yellow, clear, acid, 1004, Alb. 0, Sugar 0, W. B. C. 6-8, R. B. C. occasional, Casts 0.

June 10, Blood—R. B. C. 4,580,000, W. B. C. 7,600, Hgb. 70; Smear: P 70, L 24, M 5, E 0, B 1, Slight achromia, Normal size and shape, Platelets normal.

June 7, Kahn—Negative.

(Many subsequent urine and blood examinations showed no important change except that the specific gravity of the urine went once as high as 1016.)

June 9, X-ray—"Heart shows typical mitral bulge. Rheumatic heart disease."

G. B. V. 7.6, M. R. 6.2, M. L. 10.2, I. D. C. 23.3.

Orders—Digitalis gr. 4½ T. I. D. for three doses, then gr. 1½ T. I. D.

Progress Notes: The temperature dropped promptly from 102° to normal and the pulse rapidly at first and then slowly to 80. The joint pains have diminished, but not disappeared. There is still fibrillation. Digitalis reduced to gr. 1½ daily.

June 13—Since the last note the patient complained of pain about the left border of the heart, worse on deep respiration; chest swathe and ice-bag have given some relief. Slight crepitus heard in the left lower axilla at the end of inspiration.

June 18—About 5 A. M. the patient felt a pain like an electric shock in both legs, especially below the knees. The house officers were not called. During the next few hours the left leg became more comfortable, but the right continued to be very painful and also became numb. On examination the patient showed pallor and definite coldness of both legs, especially marked below the right knee. Active motion of the right foot was very much limited and of the left foot present but weak. Neither dorsalis pedis nor popliteal pulsation of either leg could be felt. The right femoral pulse was also absent, but the left could occasionally be felt faintly. Her general appearance was that of a person in quite severe pain.

She was prepared for operation at once and 1/6 gr. of morphine and 1/150 g. of scopolamin given.

Preoperative Diagnosis: Arterial embolus of the bifurcation of the iliacs with complete occlusion on the right and partial on the left.

The patient left the ward in good condition, but five minutes later, on arrival in the operating room, appeared to be dying. She was cyanotic, gasping for breath and unconscious. Her pulse was barely palpable, somewhere over 160. There were coarse bubbling râles at both bases. The veins in her neck were greatly distended and pulsating wildly. She was given caffeine and atropine without effect. The lungs continued to fill so that froth began to come out of her nose. At this point a venesection was suggested by the surgical resident, Dr. Stanley J. G. Nowak and 700 c.c. of blood withdrawn. This took about fifteen minutes; at the end of this time she began to breathe a little better. After another hour she was much better. It was felt that she might survive the attack of pulmonary oedema and that the operation had better be performed.

Operation: Time 2 P. M. The patient was placed on the operating table in a semi-reclining position. Under local anesthesia the right femoral artery was exposed at the point of the profunda branch. A firm mass could be felt in the artery at this point, but no downward thrust. The artery below this point was greatly contracted. After isolating the artery for 1½ inches above the bifurcation and each branch for one inch below, three pieces of small (No. 12) rubber catheter were passed under it and the ends of each piece caught in common hemostats. These were used in place of the Crile clamps formerly employed, as by gentle traction on these hemostasis may be secured more rapidly and probably with less damage to the arterial wall[1]. The artery was then opened over the clot; it was extruded. (Clot 1, Figure 1.) There was then good back bleeding from the two distal arteries, but no proximal bleeding. A uterine probe was then passed up the artery and nothing dislodged. Following this, a vein stripper with a medium sized tip was passed in to a distance of 20 cm. and on withdrawal a few fragments of clot came out, being washed by a fair stream of blood. The blood came with enough force to make a spurt about one inch high. The artery was then closed and it was seen that the stream of blood was not forceful enough to produce any visible or palpable pulsation on the exposed artery. The artery was

*From the 4th Medical and 5th Surgical Services, Boston City Hospital.

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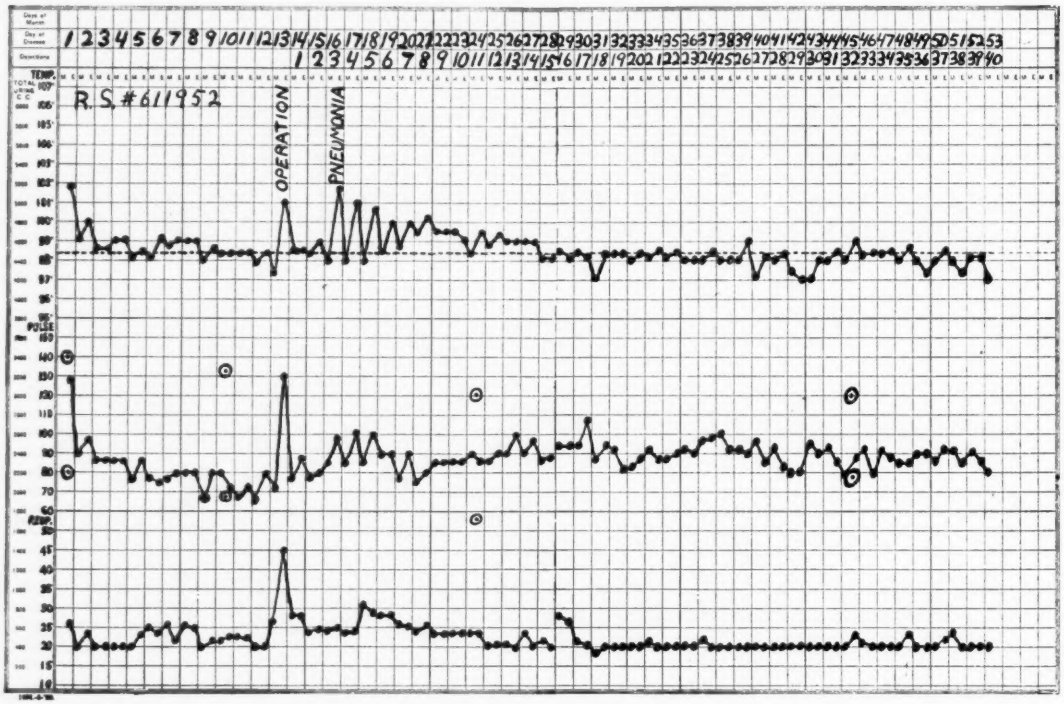
then opened again just below the previous incision and controlled as before.

Then the left femoral artery was exposed, dissected out, controlled and opened. This artery was contracted, not pulsating, and no clot could be felt at the branch. After opening, a uterine probe was passed up about 10 cm., when there was a sudden, vigorous gush of clots and blood, of such force that the operating team was well sprayed. This produced the large clots (3 and 4). The flow was controlled at once by lifting on the catheter and the other side was probed again. Both sides were probed



in turn the full length of the probes and for 30 cm. with the vein stripper, but no more firm clot could be secured. A small, very soft fresh clot was secured on the right (2). The same slow flow of blood continued from the right, but a better flow could not be obtained. It was then decided that we had been working long enough and both arteries were sutured and the wound closed. Both legs were wrapped in large amounts of cotton wadding and the patient was sent to the ward.

Postoperative Notes: Heat was applied to the legs by means of an electric bulb suspended from a cradle. The patient's general condition improved during the operation, but she had not recovered from her coma at the end of it. On arrival in the ward her lungs were clear of râles except at the extreme bases. In the evening she was conscious and looked better and pulsation could be felt in the left dorsalis pedis artery.

June 19th. The left leg and foot were absolutely normal and remained so the rest of the stay in the hospital. They were warm and pink and pulsations were present in the dorsalis pedis, popliteal and femoral arteries. There was no pain and motions were all normal. The right leg was warmer and not so dead white as before operation, but no pulsation could be felt at any point. She could, however, move her toes and foot a little and she had only slight pain.

Subsequent Notes: The circulation in the right leg improved very slowly but steadily. The patient had cramps in the calf that were troublesome and for a long time the muscles were very weak. The leg was kept warm constantly. On the fourth day after the operation she had a sudden rise in temperature to 102°, associated with cough. There were showers of crepitating to consonating râles throughout the lower third of the right chest. The wounds were clean. X-ray of the chest (portable) showed enlargement of the heart and cloudy patch of density in the left mid-chest with thickened interlobar septum above it. ? Bronchopneumonia. This chest condition cleared slowly and the chest was normal in two weeks. At the end of four weeks physiotherapy was started, but the patient could stand very little massage as it would induce cramps. At the end of three weeks she began to sit up in a chair. She was demonstrated on Saturday, September 27, at a meeting of the New England Surgical Society, when she had a normal circulation in the left leg and an almost normal circulation in the right, without, however, any pulsation along the course of the main artery. She was able to walk as well as her heart would permit her to.

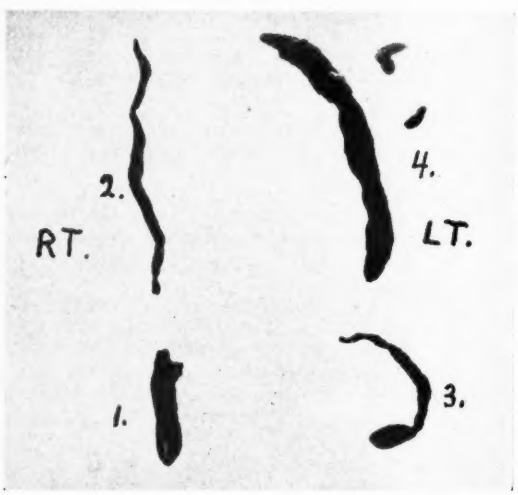


FIGURE 1. Life size photograph of clots, after preservation in formalin.

Discussion: References to the technique and general subject of embolectomy may be found in the recent paper by Lerman, Miller and Lund[2] and only a few points brought out in this case will be discussed here.

1. The Acute Cardiac Decompensation.

Here was a patient with chronic mitral stenosis, who entered the hospital in her first attack of heart failure, which cleared rapidly on rest in bed and digitalization. On the 11th night an arterial embolus became lodged in both iliac vessels. After six hours her acute heart failure returned, but was successfully relieved by venesection and embolectomy. The cause of this failure must be ascribed to the suddenly increased systemic blood pressure from the cutting off of such a large part of the arterial tree. Unfortunately, due to the excitement and confusion, no blood pressure readings were made at this time. Although it was the increased systemic pressure that caused the failure, it was the right side of the heart that failed, as evidenced by the pulmonary oedema and increased systemic venous pressure. The venesection temporarily restored some degree of compensation, while the removal of the emboli removed the primary cause.

2. The Failure to Restore Full Circulation in the Right Iliac.

Except for the small embolus at the profunda opening, no definite idea can be formed as to the exact original location of the emboli. It is perfectly possible that most of the clots removed from the left artery were pushed over from the right by the vein stripper. Two possibilities arise as to the incomplete restoration on the right. The first is damage to the intima by the clot or manipulation, and the second is incomplete removal of the clot. As for manipulation, this was equal in amount of trauma on both sides. As for the clot, the time interval of eight hours was hardly enough to cause changes which would not allow at least temporary free flow through the vessel after clearing. It seems most likely that a clot of some size was wedged in the internal iliac artery with some part of it encroaching on the lumen of the junction of the common and external arteries. Such a clot would allow the smooth-headed vein stripper to pass over it and would be very difficult to grasp from below even if this had been attempted. One might ask, why not open on it directly? The only answer is an opinion that was held at the time, and still is held, that a transperitoneal approach would certainly have been fatal, although comparatively easy to do, while a retroperitoneal approach would have been too time-consuming and difficult technically in such a sick patient.

3. How did the leg survive without full restoration of the circulation?

Although there was a fair stream of blood coming through the external iliac artery at the end of the operation, this, very likely, did not last long. However, the bifurcation of the profunda branch was cleared of a definite clot, allowing return flow to the femoral from the deep epigastric, circumflex iliac, profunda and smaller vessels to have an unimpeded path to the lower leg. It is well known that obstruction of the common iliac is not nearly so damaging to the circulation of the foot as is ligation of the external iliac or common femoral.

4. Direct or Indirect Approach in Iliac Embolism.

This case alone seems to prove the superiority of the bilateral femoral approach in most of these cases. In the first place, any laparotomy would certainly have been fatal. In the second, complete restoration would not have been secured by laparotomy alone as the clot at the right profunda would almost certainly have been missed. Downward probing of the common or external iliac artery must be difficult and unsatisfactory at best, unless an enormously long laparotomy incision is used. With a retroperitoneal incision it would seem to be almost impossible.

SUMMARY

A case of bilateral iliac arterial embolism with acute pulmonary oedema, helped by venesection and embolectomy, has been presented. Certain points in the management of such cases have been discussed.

NOTE: Four months after presentation the patient suffered another embolus, this time to the right cerebrum. The result has been a complete left hemiplegia. She is living and able to talk and eat, but of course her activities are much restricted.

REFERENCES

1 Allen, A. W.: The surgical treatment of embolism of the extremities. New Eng. J. Med. 201:304, 1929.
2 Lerman, J., Miller, F. R., and Lund, C. C.: Arterial embolism and embolectomy. J. A. M. A. 94:1128-1133, 1930.

DISCUSSION

DR. FRANK H. LAHEY, Boston: I think these papers, particularly those on the vascular disease of the extremities, are noteworthy. I have been very much interested in, and admired the work of, the Peripheral Circulatory Clinic at the Massachusetts General Hospital, and I think it has saved a great many people their extremities, to say nothing about the amount of pain of which it has relieved people. This illustrates what can be accomplished, I think, by a centralizing group interest along these lines.

We are particularly interested, of course, in this subject of embolectomy. Having many patients with thyroidism and associated cardiac decompensations and auricular fibrillations, we have a good many embolisms. I think we have

done altogether nine peripheral embolectomies. I have been particularly stimulated to discuss the subject because I want to make clear to you that embolectomy is a simple operation; that it needs early diagnosis; that it doesn't need a complicated apparatus, and that it gives many patients the opportunity to save their extremities.

On the other hand, it is disappointing in many of the cases because these patients who have embolectomy have the elements for the production of other emboli. A majority of these patients will have other emboli and die as a result. This should not, however, in any way prevent us from trying to save the legs and arms of every one of these patients in whom emboli are found.

Our great difficulty has been to educate the nurses and the assistants to get the patients diagnosed early enough and decide in favor of early operation. Most of the men who have been in contact with these patients who have had emboli recognize them very early. Some of our associates who have not had actual experience with them are not sufficiently impressed with the sudden pain, the sudden change in temperature, the blanching, and do not take temperature readings (usually unnecessary) to find out whether there are actual emboli.

We would like also to tell you from our experience that it does not make any difference if the embolus is in the aorta. You can open an aorta and take out emboli as well as you can the femoral artery. Not over six months ago we had a thyrocardiac patient with emboli. We removed the emboli successfully from her right femoral and from her left femoral, with excellent return of circulation in both legs. Two weeks later she had a sudden pain in her abdomen with complete blanching from the levels of her iliacs down and loss of both femoral pulses. She evidently had a large clot in her aorta, where her iliacs came off. We opened her abdomen, clamped her iliacs, opened her aorta, and took out a handful of clot from the aorta. It is not an extremely difficult operation, even though it sounds so. We sewed her aorta and took off the clamps, with complete return of circulation in both legs. She lived for two or three days afterwards with good circulation in her legs, and died of multiple emboli elsewhere. An autopsy was performed. Her aorta was well healed and patent. Had she not died of other emboli, she probably would have gotten good results with the removal of clots from her aorta.

There are one or two technical points in embolectomy which have proved of value. Dr. Mason has operated on most of these cases. He has shown that it is much better to milk these clots out from pressure from below than it is to try and pull them out. Incidentally, it is very essential that you put clamps on below the embolus, so that these clots are not manipulated and sent lower down into the extremity. There is no difficulty in suturing arteries, although one should release the clamp pressure gradually in order that there be no sudden strain on the suture line. If there is a little leakage, which there rarely is, with accurate China silk suturing they can be reinforced with interrupted sutures. One needs only the ordinary instruments, —the fine vessel needles and the fine needle carrier, and some vessel clamps; and if the vessel clamps are not at hand, even pieces of tape can be put around the vessel.

At the profunda branch level in the femoral artery—and these emboli always occur where branches are given off—one should obstruct not only the main vessels above and below, but the branches, so that you do not send the emboli further down the extremity.

I think we should always have peripheral emboli in mind and realize the value of early diagnosis and early operation. It actually is a comparatively simple operation and not to perform it often means the unnecessary loss of an extremity.

QUESTION: I should like to ask Dr. Smithwick whether he has ever done injections where there has been pain in fingers and hands.

DR. SMITHWICK: I have never done that.

QUESTION: I would like to ask Dr. White what he thinks of the value of ganglionectomy for pain in cases where there are few or no vascular symptoms.

DR. WHITE: We had one case of pain in the arm, which, I think was discussed by Dr. Mixter this morning. This man had a crushed finger. He had a very severe pain in the arm for six months or more. He did have some coldness of the hands, but there was no impoverished circulation that could be demonstrated by measuring the pulsation of the peripheral arteries. Reamputation of this finger did not relieve the pain, but it disappeared completely after dorsal ganglionectomy. Leriche has relieved a number of intractable cases of amputation stump neuralgias by sympathectomy. I believe that diagnostic injections of novocaine into the sympathetic ganglia will enable us to demonstrate the type of case that can be relieved by this procedure.

DR. JOHN HOMANS, Boston: I should like to pay my tribute to the ingenious pioneering work done by the group at the Massachusetts General Hospital in this field of peripheral vascular surgery. I think it is perfectly splendid. It gives everyone who is willing to study an opportunity to come to a conclusion as to matters about which, heretofore, he might very well have been entirely confused.

I wish to make one comment on Dr. White's paper. He said it was his experience that ulcers above the ankle were unlikely to be benefited by paralysis of the sympathetic supply of the leg. I happen to have a patient who contradicts

that to some extent. This girl had a typical erythema induratum, and as a result of a lumbar sympathetic neurectomy, has been entirely relieved of the ulcers in both legs and of the coldness and dampness of her skin. These ulcers were perhaps a third of the way from the ankle to the knees, and there is no doubt in her mind nor in mine that the operation has effected a cure.

I should like also to make the observation in respect to Dr. White's paper that if he wishes a cure of an ulcer of unknown origin in the leg, in view of his experience with a fatal case, I should always advise an excision of the ulcer. It seems to me it is a harmless procedure and would probably result in a cure, and it isn't necessary to attempt to deal with the sympathetic supply of the limb under those conditions; make a skin graft after an excision, however large the ulcer is, or however infected.

I should like to ask Dr. Allen about the treatment of thromboangiitis obliterans by the injection of typhoid organisms. I got the impression from his chart that this was more effective than other devices for improving the peripheral circulation. Perhaps I am wrong. I would like to know why that is so. I had supposed that this was a less certain procedure than the lumbar sympathetic neurectomy.

Dr. G. A. Moore, Brockton: I would like to ask Dr. Allen if the cases in the vasomotor group, which did not respond to typhoid serum, were found to be immune to typhoid.

Dr. William J. Mixter: I have been much interested in the work of the circulatory clinic at the Massachusetts General Hospital and have operated on certain of the cases reported. I think the poliomyelitis cases were all operated on by me and I believe I can explain some of the poor results. They all have scoliosis, which makes it very difficult to remove the upper portion of the lumbar sympathetic chain. If the upper part of the lumbar chain is not removed, the resulting rise in skin temperature is confined to the foot and ankle and ulcerations above the mid portion of the lower leg are not affected.

Dr. J. C. White: I was a little dogmatic and perhaps a little inaccurate in stating that the elevation in temperature stops at the ankle. If I should say "juncture of the lower and middle thirds of the leg", that would be more correct. In a typical case you will find an elevation of three or four degrees at the ankle, 10 degrees on the dorsum of the foot and 20 degrees in the toes after resection of the second to fourth lumbar ganglia. To see if we could get an increase in temperature higher up the leg by more extensive resections of the lumbar sympathetic trunk, I have followed the temperature readings after spinal anesthesias which have risen high enough to block the entire vasomotor outflow to the lower half of the body. I have found no rise in temperature at the knee in these cases.

Beyond reporting our single fatality I forgot to speak of the complications to ganglionectomy. There was one mild postoperative pneumonia, one pneumothorax with slight symptoms, and a few instances of minor wound sepsis.

Dr. A. W. Allen, Boston: I was very glad to hear what Dr. Lahey had to say about the simplicity of embolectomy. It is not even necessary to have arterial clamps; in fact, I think it is a good idea if you do not have them. I have a feeling that the arterial clamp may do damage to these arteries as they are rather poor vessels anyway. I found, in looking over some foreign literature, an article by Michaelson, advocating the use of small rubber tubing to control the blood flow, the tubing being the same caliber as the artery on which you were working. A six inch length of tubing is passed around the artery above the embolism; then around the two radicals below, and simply held loosely by a hemostat, the circulation being controlled by lifting the hemostat. I tried this method in the last embolectomy I did and liked it better than tape or the clamp.

In answer to Dr. Homans regarding the fatal case; we not only had excised the ulcer and grafted it, but we had made a very serious attempt to cure his varicosity by injecting the veins, all of which was unsuccessful. As soon as the patient would get up, the ulcer would recur. He was a marked vasomotor person of marked instability. We resorted to ganglionectomy after a good deal of deliberation and some three or four months of observation and treatment. It is perfectly true that had we known he had streptococcus in his ulcer, we never would have done an operation on the sympathetic system. I noted at the time of the operation that the lymphatic glands in the neighborhood of the ganglia were very large, and of course it was from these that we set the bacteria free. We have since refrained from operation in some two or three other cases, having cultured virulent organisms in them. We have also been a bit timid in doing the extensive operation, which Dr. Homans advised, of excision of ulcers through the fascia in cases with severe infection, fearing we might start up septicemia.

As far as typhoid vaccine in thromboangiitis obliterans is concerned, I think it is fair to say it is still our treatment of choice. I am not at all enthusiastic about sympathetic neurectomy in thromboangiitis obliterans. Of course, if the typhoid vaccine is purely acting upon the sympathetic nervous system, ganglionectomy should produce a speedier and more definite result, but in the few cases of thromboangiitis obliterans in which we have operated by this method the results have not been so brilliant as we expected; there has been slow heal-

ing in spite of the fact that the extremities have been warmer. It is conceivable that nonspecific foreign protein may do something more than affect the sympathetic nervous system. Just what I do not know.

In regard to Dr. Moore's question, I can't explain why some of these people will respond to typhoid vaccine and others will not. It does not seem as though typhoid immunity could be the answer because we must immunize all of these patients. Sometimes they get an enormous amount of vaccine over a period of months. I do know this: that some individuals tolerate it poorly, and have such terrific discomfort from it that perhaps we do not force it as hard as we should.

HARVARD MEDICAL SCHOOL NOTES

William O. Moseley, Jr., Traveling Fellowships have been awarded to: Bernard M. Jacobson, M.D., Harvard Medical School 1929, and to John C. Eckels, M.D., Harvard Medical School 1927, for study in Europe.

The following is the list of candidates who have secured appointments as House Officers following the competitive examinations held on March 30 and 31 and April 1:

PETER BENT BRIGHAM HOSPITAL

Surgical Appointments

July 1, 1931—Paul Younge, Daniel Iropolli.

October 1, 1931—Jean J. DuMortier, David W. Gaiser.

January 1, 1932—Darwin E. Bennett, Frederick Shillito.

Medical Appointments

June 15, 1931—Howard A. van Auken, Lowry F. Davenport, Roberto J. Parsons.

October 15, 1931—Robert F. Escamilla, Milton H. Clifford, Robert E. Glendy.

February 15, 1932—Charles G. Walcott, Maurice A. Schnitker, Christian Midelfurt.

BOSTON CITY HOSPITAL

Surgical Appointments

July, 1931—C. J. Boyajian, J. R. Barry, G. L. MacKinnon, C. H. Shedd, J. C. Harberson.

November, 1931—M. S. Thompson, Jr., E. R. Hubbard, C. H. Bradford, A. B. George, H. F. Howe.

March, 1932—G. P. Keaveney, P. B. Kelly, W. H. Butterfield, P. W. Hugenberger, H. E. Groden.

Medical Appointments

July—Daniel Holzman, E. B. Ferris, Jr., F. R. Swiatek, R. Wilson, Jr., W. Wetherbee, Jr.

October—G. J. Ravit, Jesse McCall, J. C. Corrigan, F. J. Otis, R. A. Iongas.

January, 1932—Irwin Stein, G. C. Owen, I. C. Brudno, K. J. Thompson, F. R. Feldman.

April, 1932—Samuel Levine, M. E. Cohen, L. R. Weiss, C. W. Steele.

MASSACHUSETTS GENERAL HOSPITAL

Medical

July 1—David A. Young, Richard S. Hawkes.

October 1—Henry D. Stebbins, Richard J. Clark.

January, 1932—Richard B. Copps, Charles F. Warren.

April, 1932—Michael E. Murray, Jr., Neil L. P. Crowne.

Surgical

July—Richard E. Alt, Somers H. Sturgis.

October—Walter E. Garrey, Champ. Lyons.

January, 1932—Archibald G. Gould, Harrison E. Kennard.

April, 1932—Samuel B. Kirkwood, Richard L. Pearse.

BETH ISRAEL HOSPITAL

Medical

Harry Resnik, Jr., Morton Brown, Stuart E. Krohn.

Surgical

Louis H. Nason, Samuel Gilman, Henry L. Cabitt.

The following appointments at the Medical School of Harvard University were approved by the Corporation on April 13, 1931:

For one year from September 1, 1930:

Henry Nickerson Pratt, M.D., Assistant in Comparative Pathology.

From March 1 to September 1, 1931:

Olive Cushing Smith, M.D., Research Fellow in Physiology.

From April 1 to September 1, 1931:

Virgil Glenn Casten, M.D., Assistant in Ophthalmology.

Egon Lorenz, Ph.D., Research Fellow in Preventive Medicine and Hygiene.

Murray Jacob Shear, Ph.D., Research Fellow in Preventive Medicine and Hygiene.

For one year from September 1, 1931:

Charles Victor Seastone, Jr., A.B., Austin Teaching Fellow in Bacteriology.

Change of title:

LeRoy Dryden Fothergill, M.D., From Assistant in Bacteriology and Immunology and in Pediatrics, to Assistant in Bacteriology and Immunology, in Pediatrics, and in Comparative Pathology.

The following scholarships for First Year students for the year 1930-31 were approved by the Corporation on April 13, 1931:

George Haven Scholarships to Robert C. Darling, William N. Etheridge, Don W. Freeman, John R. Graham, Samuel J. King, Harry L. Kozol, Edwin B. McLean, Benjamin R. Reiter, Karl Shepard, Meyer R. Whitehill, John C. Wilcox, Samuel L. Yee.

David Williams Cheever Scholarship to Howard Ingram Suby.

Charlotte Green Scholarship to Robert T. Moulton.

MOTHERS AND THEIR BABIES CARED FOR AT THE BOSTON CITY HOSPITAL IN 1929*

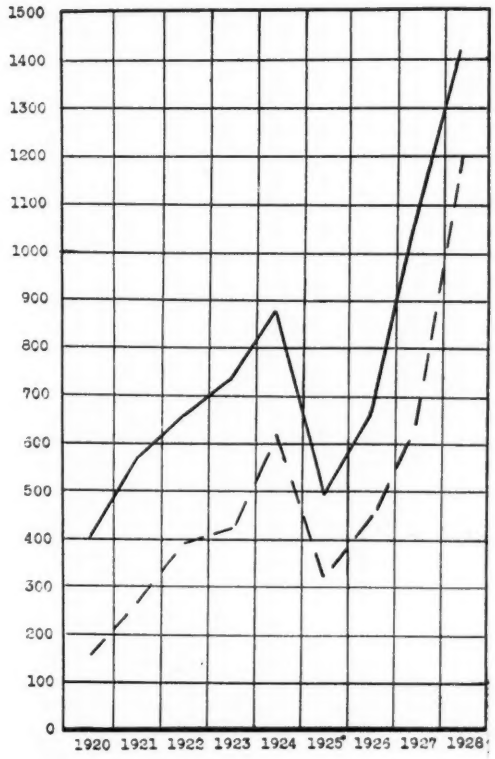
BY HAZEL W. BRIDGES†

NEARLY nine per cent. of all the infants born in Boston in 1929 first saw the light of day at the Boston City Hospital. There were 1587 births in this institution during the year February 1, 1929 to January 31, 1930, whereas the total registered births in the entire city of Boston during the same period were 18,019. Housing limitations, as well as a desire for scientific care, are causing women in Boston, as in cities all over the country, to seek hospital accommodations for confinement. Publicly supported hospitals, as well as private hospitals, are feeling the influence of this growing tendency, because women of small means are also recognizing the advantages of scientific equipment and services preceding and during confinement. The increasing use of such institutions is strikingly demonstrated in the growth of the obstetrical department of the Boston City Hospital.

In October 1916 a maternity ward of twenty beds was opened as a part of the gynecological service, and in that year 179 women were delivered in the hospital. In another year the number had doubled and in 1929 more than 1500 women were the recipients of such care. In 1924 an antepartum clinic was established three days per week in connection with the gynecological clinic and since that time there has been a steady increase in the number of women applying each year for prenatal care, and a growing proportion of those who were supervised during pregnancy have also been delivered in the house. (Chart I.)

Since about April, 1925, due to the necessity of establishing some limitation of intake to the maternity wards, admissions to the prenatal clinic have been limited to those having a Boston settlement. Since then each prospective prenatal patient has been interviewed by the settlement clerk, who ascertains her residential rights to confinement care in the hospital, and also by the social worker, who takes a brief social history. The latter steers to other institutions those pregnant women without Boston settlements, while those who are Boston settled are admitted to the prenatal clinic and booked for confinement in the hospital. After the first clinic visit, prenatal patients are referred by the clinic social worker to the Community Health Association, whose nurses give nursing care and advice in the homes. The patients continue to report at regular intervals to the doctor in the clinic. A follow-up system is maintained by the social worker, who serves as a means of unifying the work of the clinic doctors and the district nurses. Social case work is undertaken with a limited group of the patients. The above procedure of admitting patients accounts in large measure for the increased proportion of hospital maternity cases which have received prenatal care in the prenatal clinic.

CHART I.
Deliveries Related to Number Receiving Supervision in Prenatal Clinic.
Boston City Hospital, 1920 to 1928.



—— Deliveries. - - - Supervised in Prenatal Clinic.
*Represents 11 months, wards temporarily closed.
Data for this Chart is in Table I.

The outstanding event in the history of the obstetrical department of the hospital was the opening in 1927 of the new, modern, and up-to-date building for maternity and gynecological patients. This building, with excellent scientific equipment, is designed to promote privacy and comfort for each patient. It contains, at the present time, approximately sixty beds for the use of obstetrical patients, and eighty-eight cribs for infants. The increased facilities have attracted larger numbers of pregnant women to the hospital, and not only have the above num-

*A study submitted in partial fulfillment of the requirements for the degree of master of science.

†Bridges—Supervisor, Department of Social Work, Boston City Hospital 1930-. For record and address of author, see "This Week's Issue", page 887.

TABLE I

NUMBER OF DELIVERIES RELATED TO NUMBER RECEIVING PRENATAL SUPERVISION IN PRENATAL CLINIC, BOSTON CITY HOSPITAL, 1920 TO 1928

Years	*Women* Delivered	Supervised in prenatal clinic
Total	6832	4421
1920	403	160
1921	565	265
1922	652	384
1923	728	418
1924	874	614
1925*	486	317
1926	653	444
1927	1053	635
1928	1418	1184

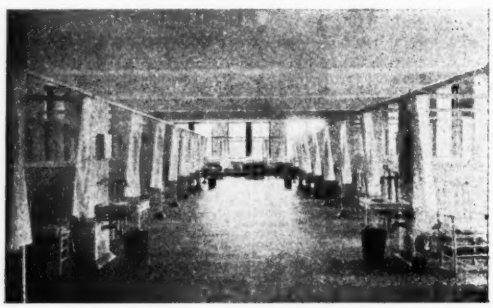
*Represents 11 months. Wards temporarily closed because of epidemic of puerperal sepsis.

These figures were taken from the Annual Reports of the Trustees of the Boston City Hospital and cover the Hospital fiscal years.

during the selected year. Answers have been sought for the following questions: Who are the mothers who place themselves under public care during pregnancy and confinement? Where do they live and what are their economic resources and home responsibilities? Do they comprise a group which could pay in full or in part for such services? And probably most important of all,—how do they respond to the highly scientific care which is provided for them in the finely equipped wards of a publicly supported hospital? Are educational activities necessary in order to supplement the services offered and insure their most effective utilization? Should the entire service be interpreted to the community in order that it may be better used by the community and reach those in greatest need?

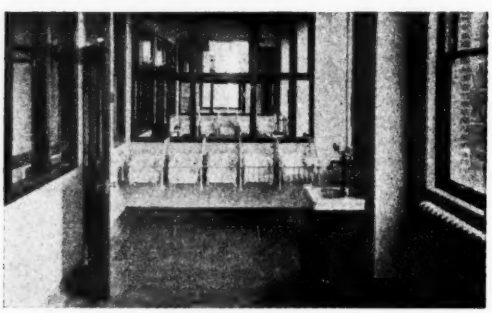
The material for the present study has been taken from the prenatal clinic attendance records, and delivery records of all women admitted for confinement during the period, February 1, 1929 to January 31, 1930, from the birth certificates of their infants, and from the brief social histories taken by the social worker at the time of admission to the prenatal clinic. Many of the women, including those who did not receive prenatal supervision in the clinic but were admitted to the hospital as emergency cases, were interviewed personally on the wards.

Maternity Building, Boston City Hospital.



Interior of Maternity Ward, Boston City Hospital.

Interior of Maternity Ward—Showing Cubicles, Boston City Hospital.



Interior of Nursery, Maternity Building, Boston City Hospital.

ber of beds been kept filled but the extension of facilities during the coming year is inevitable. At the present time multiparae with uneventful recovery are discharged on the eleventh day after confinement, while primiparae are kept a day longer.

In view of the rapid expansion in this department, it has been of interest to study the group of 1587 women who utilized the services offered

DISTRICTS IN WHICH THE MOTHERS LIVED

Although nineteen Boston districts were represented in the addresses given by the mothers on the birth certificates, more than four-fifths of them came from six of the nineteen districts. The four districts lying in closest proximity to the hospital, namely, Roxbury, Dorchester, South Boston and the South End, contributed nearly two out of every three patients. Obviously women residing in these four districts would find it more convenient to use the hospital. This would be particularly true of those who attended the prenatal clinic. The remainder of the group were distributed through thirteen districts, eight of which furnished a fairly uniform number, and the remaining five a smaller representation. (Table II.)

TABLE II

DISTRIBUTION BY DISTRICT OF RESIDENCE OF MOTHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

District of Residence	*Mothers*	
	Number	Per cent.
Total	1587	100.00
Roxbury	394	24.8
Dorchester	261	16.4
South Boston	219	13.8
South End	154	9.7
Charlestown	145	9.2
East Boston	108	6.8
West End	18	1.1
Back Bay	34	2.1
Jamaica Plain	41	2.6
Brighton	19	1.1
Allston	16	1.0
Mattapan	21	1.2
Roslindale	19	1.1
Hyde Park	25	1.4
Other Boston*	73	4.4
Outside Boston	31	2.0
Not reported	9	0.6

*Includes Readville, Neponset, Milton, West Roxbury, North End and other Boston addresses where the district was not determined.

Twelve years ago the South End district contributed nearly one out of every four mothers delivered in the hospital[5]. The fact that it has dropped from first place in 1917 to fourth place in 1929 is significant of the change in its population. Today it is the great lodging house section of the city, sheltering many unattached, transitory persons of the type unlikely, except in the case of a minority, to be utilizing the services of a maternity hospital. Also, among the women of its increasingly foreign population, the advantages of institutional care during confinement have not been readily recognized. That South Boston was the third largest contributor to the maternity wards in 1929 is suggestive of the extension of health education facilities in that district.

NATIVITY OF THE FATHERS AND MOTHERS

Examination of the birth certificates of infants born in the hospital during the period

TABLE III-a

DISTRIBUTION BY AGE AND BIRTHPLACE OF MOTHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Mothers of specified birthplaces, with ages stated below:

Birthplace	Total		Under 20 years		20 to 24 years		25 to 29 years		30 to 34 years		35 to 39 years		40 years and over		Not reported	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total	1587	100.0	194	12.1	497	31.3	369	22.2	242	15.2	150	9.3	47	3.0	88	5.6
United States	1092	68.7	181	11.2	402	25.3	252	15.9	152	9.5	86	5.4	19	1.2	—	—
Boston	721	45.4	112	7.0	266	16.8	179	11.3	96	6.0	54	3.4	14	0.9	—	—
Other Massachusetts	222	14.0	50	3.0	80	5.0	43	2.7	31	2.0	16	1.0	2	0.1	—	—
Other New England	83	5.2	9	0.6	27	1.7	20	1.3	15	0.9	10	0.6	2	0.1	—	—
Other United States	66	4.1	10	0.6	29	1.8	10	0.6	10	0.6	6	0.4	1	0.1	—	—
Foreign countries	400	25.3	13	0.9	95	6.0	117	6.3	84	5.3	64	3.9	26	1.7	1	0.1
Ireland	123	7.8	1	0.1	27	1.7	33	2.0	25	1.6	27	1.7	10	0.6	—	—
England, Scotland	20	1.3	—	—	2	0.1	8	0.5	6	0.4	2	0.1	2	0.1	—	—
Canada	148	9.3	10	0.6	45	2.8	44	2.8	32	2.0	11	0.7	6	0.4	—	—
British West Indies	13	0.8	—	—	3	0.2	4	0.2	3	0.2	2	0.1	1	0.1	—	—
Italy	39	2.5	—	—	8	0.5	16	0.1	5	0.3	7	0.4	3	0.2	—	—
Russia	22	1.4	—	—	4	0.3	6	0.4	5	0.3	5	0.3	2	0.1	—	—
Poland	11	0.7	1	0.1	—	—	2	0.1	3	0.2	4	0.2	1	0.1	—	—
Other	24	1.5	1	0.1	6	0.4	4	0.2	5	0.3	6	0.4	1	0.1	1	0.1
Not reported	95	6.0	—	—	—	—	—	—	6	0.4	—	—	2	0.1	87	5.5

studied revealed the fact that nearly 70 per cent. of the mothers were natives of the United States, and more than 64 per cent. of New England states. Only 66 out of a total of 1092 native-born mothers came from other parts of the United States. (Tables III-a and III-b.)

TABLE III-b

DISTRIBUTION BY BIRTHPLACE OF NATIVE BORN MOTHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Birthplace	*Mothers*	
	Number	Per cent.
Total	1092	100.0
Boston	721	66.0
Other Massachusetts	222	20.3
Other New England	83	7.6
Other United States	66	6.1

TABLE III-c

DISTRIBUTION BY BIRTHPLACE OF FOREIGN BORN MOTHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Country of birth	*Mothers*	
	Number	Per cent.
Total	400	100.0
Ireland	123	30.8
England, Scotland	20	5.0
Canada	148	37.0
British West Indies	13	3.2
Italy	39	9.8
Russia	22	5.5
Poland	11	2.7
Other	24	6.0

The percentage distribution was practically the same for the fathers, of whom more than 70 per cent. were native born and nearly 50 per cent. were born in Boston. (Table IV.)

Of the 22 per cent. of fathers who were foreign born, the following countries had the highest quotas: Canada 6.5 per cent., Ireland 5.6 per cent., and Italy 4.1 per cent. Of the 400 foreign born mothers, those born in Canada and in Ireland formed larger percentage groups than those of the fathers. However, the number of foreign born mothers showed a decided decrease from 1917, when they formed 37 per cent. of the total, with those of Irish birth contributing 26 per cent[5]. The fact that in 1929 the Canadian mothers exceeded the Irish mothers by more than 6 per cent. is significant of a change in the immigration from the two countries, and of the decrease in female immigration from European countries during the past twelve years. That the Canadian and Irish born mothers form larger groups than those of the fathers would support the assumption that many immigrant women marry native born husbands. On the other hand, the fact that the Italian born mothers were considerably fewer in proportion than the Italian born fathers, might indicate an opposite tendency. However, this

TABLE IV

DISTRIBUTION BY AGE AND BIRTHPLACE OF FATHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Fathers of specified birthplaces, with ages stated below:

Birthplace	Total		Under 20 years		20 to 24 years		25 to 29 years		30 to 34 years		35 to 39 years		40 years and over		Not reported	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total	1477*	100.0	28	2.0	312	21.0	421	28.6	259	17.5	200	13.3	170	11.6	87	5.9
United States	1045	70.8	26	1.8	266	18.0	347	23.5	189	12.9	129	8.7	88	5.9	—	—
Boston	700	47.4	17	1.2	193	13.1	238	16.1	130	8.8	77	5.2	45	3.0	—	—
Other Massachusetts	167	11.3	8	0.5	37	2.5	56	3.8	29	2.0	20	1.3	17	1.2	—	—
Other New England	66	4.5	1	0.1	12	0.8	19	1.3	13	0.9	13	0.9	8	0.5	—	—
Other United States	112	7.6	—	—	24	1.6	34	2.3	17	1.2	19	1.3	18	1.2	—	—
Foreign Countries	339	22.5	1	0.1	44	2.9	70	4.8	70	4.6	71	4.6	82	5.7	—	—
Ireland	88	5.6	—	—	7	0.5	19	1.3	11	0.7	22	1.4	29	2.0	—	—
England, Scotland	16	1.1	—	—	2	0.1	4	0.3	3	0.2	1	0.1	6	0.4	—	—
Canada	96	6.5	1	0.1	21	1.4	22	1.5	22	1.5	20	1.3	10	0.7	—	—
British West Indies	13	0.8	—	—	2	0.1	6	0.4	2	0.1	2	0.1	1	0.1	—	—
Italy	61	4.1	—	—	9	0.6	10	0.7	14	0.9	9	0.6	19	1.3	—	—
Russia	21	1.4	—	—	—	—	2	0.1	6	0.4	6	0.4	7	0.5	—	—
Poland	7	0.5	—	—	—	—	1	0.1	—	—	3	0.2	3	0.2	—	—
Other	37	2.5	—	—	3	0.2	6	0.4	12	0.8	8	0.5	7	0.5	1	0.1
Not reported	93	6.3	1	0.1	2	0.1	4	0.3	—	—	—	—	—	—	86	5.8

*Fathers of 110 illegitimate infants are excluded.

TABLE V

TABLE V

DISTRIBUTION BY AGE AND OCCUPATION OF FATHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Occupation	Total		*Fathers with specified occupations whose ages were:* Under 20 years		20 to 24 years		25 to 29 years		30 to 34 years		35 to 39 years		40 years and over		Not reported	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total	1477*	100.0	28	100.0	312	100.0	421	100.0	259	100.0	200	100.0	170	100.0	87	100.0
Manufacturing																
Baker	8	0.5	—	—	5	1.6	2	0.5	—	—	1	0.5	—	—	—	—
Printer	15	1.0	—	—	5	1.6	6	1.4	—	—	2	1.0	2	1.2	—	—
Electrician	20	1.4	—	—	5	1.6	5	1.2	2	0.8	5	2.5	2	1.2	1	1.1
Metal worker	21	1.4	1	3.6	5	1.6	6	1.4	1	0.4	3	1.5	4	2.4	1	1.1
Machinist	64	4.3	1	3.6	15	4.8	19	4.5	15	5.8	5	2.5	7	4.1	2	2.3
Semi-skilled shoe worker	22	1.5	—	—	2	0.6	6	1.4	5	1.9	5	2.5	2	1.2	2	2.3
Semi-skilled factory worker	16	1.1	1	3.6	5	1.6	4	1.0	3	1.1	—	—	3	1.8	—	—
Tailor	11	0.7	—	—	1	0.3	1	0.2	1	0.4	3	1.5	5	2.9	—	—
Carpenter	22	1.5	1	3.6	3	1.0	4	1.0	5	1.9	5	2.5	4	2.3	—	—
Plasterer or brick or stone mason	10	0.7	—	—	3	1.0	2	0.5	2	0.8	3	1.5	—	—	—	—
Painter	34	2.3	—	—	6	1.9	8	1.9	10	3.9	5	2.5	4	2.3	1	1.1
Plumber or gas or steam fitter	26	1.8	1	3.6	4	1.3	6	1.4	6	2.3	7	3.5	2	1.2	—	—
Unskilled laborer	292	19.8	2	7.1	52	16.7	92	21.9	48	18.5	41	20.5	48	28.2	9	10.3
Other	67	4.5	—	—	15	4.8	19	4.5	14	5.4	7	3.5	7	4.1	5	5.7
Transportation																
Chauffeur, taxi or truck driver	243	16.5	3	10.7	67	21.5	95	22.6	43	16.6	18	9.0	11	6.5	6	6.9
Motorman, conductor, engineer or fireman	33	2.2	—	—	1	0.3	6	1.4	7	2.7	12	6.0	7	4.1	—	—
Teamster or expressman	34	2.3	1	3.6	6	1.9	10	2.4	6	2.3	7	3.5	2	1.2	2	2.3
Seaman or fisherman	9	0.6	1	3.6	1	0.3	3	0.7	3	1.1	1	0.5	—	—	—	—
Longshoreman	39	2.6	—	—	6	1.9	15	3.6	8	3.1	5	2.5	4	2.3	1	1.1
Porter	20	1.4	—	—	4	1.3	5	1.2	4	1.5	4	2.0	1	0.6	2	2.3
Other	17	1.2	1	3.6	6	1.9	4	1.0	2	0.8	1	0.5	3	1.8	—	—
Trade																
Clerk in store	50	3.4	4	14.3	14	4.5	13	3.1	7	2.7	5	2.5	3	1.8	4	4.6
Commercial traveler	22	1.5	—	—	3	1.0	9	2.1	1	0.4	6	3.0	3	1.8	—	—
Insurance agent	6	0.4	—	—	1	0.3	1	0.2	1	0.4	2	1.0	1	0.6	—	—
Retail dealer	15	1.0	—	—	2	0.6	2	0.5	2	0.8	4	2.0	5	2.9	—	—
Shipping clerk	13	0.9	3	10.7	3	1.0	7	1.7	—	—	—	—	—	—	—	—
Other	43	2.9	—	—	10	3.2	13	3.1	11	4.2	4	2.0	3	1.8	2	2.3
Professional																
Bookkeeper or cashier	6	0.4	1	3.6	3	1.0	2	0.5	—	—	—	—	—	—	—	—
Other	21	1.4	—	—	7	2.2	6	1.4	2	0.8	2	1.0	4	2.3	—	—
Public service																
Soldier, sailor, marine	22	1.5	1	3.6	13	4.2	3	0.7	4	1.5	—	—	—	—	1	1.1
Policeman or fireman	35	2.4	—	—	3	1.0	3	0.7	13	5.0	9	4.5	6	3.5	1	1.1
Other	22	1.5	1	3.6	1	0.3	1	0.2	8	3.1	5	2.5	6	3.5	—	—
Domestic or personal service																
Barber	11	0.7	—	—	2	0.6	3	0.7	1	0.4	1	0.5	4	2.3	—	—
Janitor	13	0.9	—	—	3	1.0	2	0.5	2	0.8	3	1.5	3	1.8	—	—
Hotel or restaurant work	52	3.5	2	7.1	7	2.2	19	4.5	12	4.6	5	2.5	7	4.1	—	—
Other	19	1.3	2	7.1	6	1.9	4	0.9	1	0.4	5	2.5	1	0.6	—	—
Not reported	48	3.2	—	—	1	0.3	1	0.2	1	0.4	—	—	2	1.2	43	49.4
None	56	3.8	1	3.6	16	5.1	14	3.3	8	3.1	9	4.5	4	2.3	4	4.6

*Fathers of 110 illegitimate infants are excluded.

cannot be pressed very far because the number of Italians among both the fathers and mothers was small.

AGE DISTRIBUTION OF THE FATHERS AND MOTHERS

The modal age group for all the fathers was 25 to 29 years, which was representative of over 28 per cent. The next larger group, 21 per cent., was 20 to 24 years, followed by 17.5 per cent. who were 30 to 34 years of age. The modal group for the foreign born fathers was 40 years and over. Whereas, only one out of twelve of the native born fathers fell in this age group, it contained one out of every four of the foreign born. The number of foreign born fathers under 20 years was almost negligible and the number under 25 was very small. The higher age distribution was particularly true of the Irish, Italian, and Russian born fathers, but the ages of the Canadian born resembled more closely those of the native.

The mothers were consistently younger than the fathers, the modal age group being 20 to 24 years. More than one-half (53 per cent.) of the group studied, were under 30 years of age. Evidently it is the younger women who seek institutional care during confinement. Whereas, only 2 per cent. of the fathers were under 20 years, more than 12 per cent. of the mothers fell in this age group. Similarly to the fathers, the foreign born mothers had a higher age level than that of the native born, nearly three out of every four being over 25 years. Of the 13 foreign born mothers who were under 20, 10 were Canadian.

OCCUPATIONS OF THE FATHERS

Thirty occupations were reported for 1477 fathers, but over one-third (36 per cent.) were either unskilled laborers or taxi and truck drivers. The unskilled laborers were fairly evenly distributed among men 20 to 40 years old, although in the modal group, 25 to 29 years, the number was nearly double that in any other group. That men of this age should be so poorly prepared, occupationally, to meet the responsibilities of fatherhood, is of deep social significance. Younger, on the average, than the laborers, were the taxi or truck drivers. Thirty per cent. of the laborers, compared with 10 per cent. of the taxi and truck drivers, were 35 years old and over. Nearly 4 per cent. of the whole group of fathers had no occupations. This figure should not be confused with the considerably larger number who were temporarily unemployed.

Table V shows the remaining 60 per cent. fairly evenly distributed in occupations requiring, for the most part, some skill, with the machinists, store clerks, hotel and restaurant workers forming slightly larger groups. The machinists represented the largest single group of skilled workers, having a representation of 4.3 per cent. Three-fourths of this group were under 35 years of age. There was a conspicuous lack of fathers in trades requiring a considerable amount of skill or technical ability. The majority were engaged in occupations which were not only seasonal but, at best, incapable of paying a wage that would keep a family above the subsistence level.

ECONOMIC STATUS OF FAMILIES REPRESENTED

It is probable that the family incomes in practically all instances were represented by the earnings of the fathers. The findings for this part of the study were based upon the weekly earnings of 1061 fathers at the time the mothers applied for prenatal care. These showed a bimodal distribution, the first composed of those earning $25 to $29, and the second of those with no earnings. (Tables VI-a and VI-b.) The following facts are of outstanding significance:

1. Nearly ¼ of the fathers were earning nothing.
2. Nearly ½ were earning $20 to $30 per week.
3. More than 90 per cent. of those who reported incomes earned less than $35 per week.
4. Only 7 per cent. earned $35 and over per week, and the earnings of 63 per cent. of this group were shared by 5 or more persons.

There were comparatively few large families represented by this selected group of 1061 fathers and mothers. The first quartile included families of only 2 persons, the second those of 3 persons, the third 4 to 5 persons, and the fourth families of 5 or more. Less than one-fourth of the fathers had six or more persons dependent upon their earnings. Table VI-a shows a tendency for the size of the family to vary directly with the father's earnings, indicating to a certain extent that the older men, who would naturally have the greater number of children, were earning, on the average, a little more than the younger.

ANTEPARTUM CARE OF THE MOTHERS

Seventy per cent. of the mothers received medical prenatal care in the prenatal clinic, but one-fourth of the mothers of infants born in the hospital during the selected year did not receive any prenatal care. A very small number stated that they had received some prenatal care by private physicians. (Table VII.) Of the above mentioned 70 per cent. who received care in the clinic, only 1 out of every 9 placed herself under supervision before the fifth month of pregnancy. More than one-half of the group applied for prenatal care in the seventh or eighth month of pregnancy. Less than 1 out of 4 could be said to have received a minimum of grade A prenatal care, according to the standard used for classification in a study of maternal mortality made by the Federal Chil-

TABLE VI-a

DISTRIBUTION OF FATHERS BY THEIR WEEKLY EARNINGS AND NUMBER IN FAMILY SHARING EARNINGS WHEN MOTHERS APPLIED FOR MEDICAL PRENATAL CARE
INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Weekly earnings of father	Total		*Fathers with specified weekly earnings shared by the number of persons stated below*																	
			2		3		4		5		6		7		8		9		10 and over	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total	1061*	100.0	279	100.0	267	100.0	175	100.0	142	100.0	74	100.0	51	100.0	28	100.0	25	100.0	20	100.0
None	245	23.1	80	28.7	75	28.1	26	14.8	29	20.4	16	21.6	12	23.5	3	10.7	1	4.0	3	15.0
Less than $10	5	0.5	4	1.4	1	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$10 to $14	21	2.0	6	2.1	8	3.0	5	2.8	2	1.4	—	—	—	—	—	—	—	—	—	—
$15 to $19	103	9.7	47	16.8	25	9.4	12	6.8	10	7.0	2	2.7	2	3.9	5	17.8	—	—	—	—
$20 to $24	213	20.1	53	19.0	72	27.0	43	24.6	21	14.8	13	17.6	5	9.8	1	3.6	4	16.0	1	5.0
$25 to $29	264	24.9	57	20.4	52	19.5	52	29.7	46	32.4	23	31.1	14	27.4	7	25.0	7	28.0	6	30.0
$30 to $34	134	12.6	24	8.6	26	9.7	28	16.0	18	12.7	8	10.8	14	27.4	6	21.4	6	24.0	4	20.0
$35 to $39	51	4.8	4	1.4	7	2.6	7	4.0	11	7.7	9	12.2	2	3.9	6	21.4	4	16.0	1	5.0
$40 and over	25	2.3	4	1.4	1	0.4	2	1.1	5	3.5	3	4.1	2	3.9	—	—	3	12.0	5	25.0

*49 fathers, including 28 fathers of illegitimate infants and 21 whose earnings were not reported, are excluded.

TABLE VI-b

DISTRIBUTION OF FATHERS BY THEIR WEEKLY EARNINGS AND NUMBER IN FAMILY SHARING EARNINGS WHEN MOTHERS APPLIED FOR MEDICAL PRENATAL CARE
INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Weekly earnings of father	Total		*Fathers with specified weekly earnings shared by the number of persons stated below*																	
			2		3		4		5		6		7		8		9		10 and over	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total	1061*	100.0	279		267		175		142		74		51		28		25		20	
None	245	100.0	80	32.6	75	30.6	26	10.6	29	11.8	16	6.5	12	4.9	3	1.2	1	0.4	3	1.2
Less than $10	5	100.0	4	80.0	1	20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$10 to $14	21	100.0	6	28.6	8	38.1	5	23.8	2	9.5	—	—	—	—	—	—	—	—	—	—
$15 to $19	103	100.0	47	45.6	25	24.3	12	11.6	10	9.7	2	1.9	2	1.9	5	4.8	—	—	—	—
$20 to $24	213	100.0	53	24.9	72	33.8	43	20.2	21	9.8	13	6.1	5	2.3	1	0.5	4	1.9	1	0.5
$25 to $29	264	100.0	57	21.6	52	19.7	52	19.7	46	17.4	23	8.7	14	5.3	7	2.6	7	2.6	6	2.3
$30 to $34	134	100.0	24	17.9	26	19.4	28	20.9	18	13.4	8	6.0	14	10.4	6	4.5	6	4.5	4	3.0
$35 to $39	51	100.0	4	7.8	7	13.7	7	13.7	11	21.6	9	17.6	2	3.9	6	11.8	4	7.8	1	2.0
$40 and over	25	100.0	4	16.0	1	4.0	2	8.0	5	20.0	3	12.0	2	8.0	—	—	3	12.0	5	20.0

*49 fathers, including 28 fathers of illegitimate infants and 21 whose earnings were not reported, are excluded.

dren's Bureau[1]. Such a standard included the following: Monthly visits to the prenatal clinic from the fifth to the ninth month, monthly urinalysis during the same period, abdominal examination, and pelvic measurements. These requirements were considered low and by no means ideal. That less than one-fourth of the mothers delivered in the hospital, during the period studied, presented themselves for treatment sufficiently early in pregnancy to receive this minimum of care is a point worthy of serious consideration.

TABLE VII

PRENATAL CARE OF MOTHERS OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Type of prenatal care	*Mothers*	
	Number	Per cent.
Total mothers	1587*	100.0
Medical prenatal care in Boston City Hospital Prenatal Clinic	1110	70.0
Some prenatal care by a private physician	27	1.7
No prenatal care	395	24.9
Not reported	55	3.4

*Mothers of twins are counted twice.

TABLE VIII

THE MONTH OF PREGNANCY IN WHICH APPLICATION WAS MADE FOR PRENATAL CARE IN THE BOSTON CITY HOSPITAL PRENATAL CLINIC, BY MOTHERS OF 1110 INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Month of pregnancy in which application was made for medical prenatal care	*Mothers*			
	Number	Per cent.	Cumulative number	Cumulative per cent.
Total	1110*	100.0	1110	100.0
Second	21	1.9	21	1.9
Third	36	3.2	57	5.1
Fourth	72	6.5	129	11.6
Fifth	142	12.8	271	24.4
Sixth	193	17.4	464	41.8
Seventh	281	25.3	745	67.1
Eighth	280	25.2	1025	92.3
Ninth	85	7.7	1110	100.0

*Mothers of twins are counted twice.

RELATION OF ANTEPARTUM CARE TO THE BIRTH WEIGHT OF THE INFANTS

More than 63 per cent. of all the infants whose mothers received some prenatal care weighed between 6 pounds, 8 ounces and 8 pounds, 7 ounces, while only 47 per cent. of the infants whose mothers received no prenatal care fell within this weight distribution. The modal weight group for infants of mothers who received some prenatal care was 7 pounds to 7 pounds, 7 ounces, which represented more than 22 per cent. of the total. The group of infants whose mothers did not receive any prenatal care had a bi-modal distribution, one mode being 7 pounds to 7 pounds, 7 ounces, and the other being less than five pounds. The latter group was composed largely of infants of premature birth, but with prenatal care their mothers might have carried them to term. (Tables IX-a and IX-b.) Of 74 infants weighing less than 5 pounds at birth, 69 per cent. were infants whose mothers had not received any prenatal care. Forty-one per cent. of the infants of mothers in this group weighed less than 6½ pounds, whereas this was true of only 17 per cent. of the infants whose mothers received some prenatal care.

In the groups of infants weighing less than 8 pounds, the females were consistently heavier than the males. In groups of higher weight, the sex tendency was reversed, i.e., the males weighed more than the females. (Table X.)

SUMMARY

A prenatal and confinement service of excellent standard is offered by the municipality to Boston settled women who want such service and cannot afford to pay for it. That the advantages are being recognized by an increasing number of women is shown by the 700 per cent. increase since 1916 in those availing themselves of this care. As a health education force in the community, the hospital should be commended for this achievement. According to the Council on Medical Education and Hospitals of the American Medical Association, "The ratio of hospital beds to the population, is an index, not only to the extent of hospital facilities, but also to the communities' standards of living; for in general, the more advanced the community, the more use is made of hospitals." In 1929, as in 1917, the obstetrical department of the hospital dealt, for the most part, with young, native-born women, a group which should be responsive to teaching along the lines of maternal and infant welfare. The majority of these women came from neighboring localities instead of from districts throughout the city. There is an apparent reluctance or inability on the part of women residing in the outlying districts to make use of the clinics. It is reasonable to believe that many of them are in need of obstetrical services. Does this indicate the need of branch prenatal clinics, at least in the most populous of the outlying districts, in order that there may be a more general utilization of the admirable obstetrical facilities offered to women of limited means?

Examination of the economic resources of mothers cared for in 1929 brings us to a consideration of what has been called the "great outstanding problem before the medical profession today," namely, the cost of medical care. In speaking of this problem, the Committee on the Costs of Medical Care, of which Dr. Ray Lyman Wilbur is the chairman, has stated that it is "the result of maladjustment following sev-

TABLE IX-a (Numbers)

TABLE IX-a (Numbers)

DISTRIBUTION OF MOTHERS BY TYPE AND AMOUNT OF PRENATAL CARE RECEIVED, AND BY THE BIRTH WEIGHT OF THEIR INFANTS, BORN IN THE BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Birth weight of infants	*Number of mothers who received medical prenatal care in Boston City Hospital Prenatal Clinic in the month of pregnancy stated below:*									*Number of mothers whose prenatal supervision was as stated below:*				
	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Total	Some prenatal care by private physician	No prenatal care	Not reported	Total	Grand Total
Total	18	31	58	127	178	246	240	70	968	25	328	46	399	1367*
Less than 5 lbs.	1	—	2	3	2	4	—	2	14	1	51	8	60	74
5 lbs. to 5 lbs. 7 ozs.	—	1	1	7	4	6	13	5	37	—	12	1	13	50
5 lbs. 8 ozs. to 5 lbs. 15 ozs.	1	—	4	6	11	5	11	4	42	3	24	2	29	71
6 lbs. to 6 lbs. 7 ozs.	2	3	4	7	13	15	25	5	74	1	47	4	52	126
6 lbs. 8 ozs. to 6 lbs. 15 ozs.	1	6	7	14	17	36	26	15	122	1	35	12	48	170
7 lbs. to 7 lbs. 7 ozs.	4	7	13	27	36	65	50	17	219	5	60	9	74	293
7 lbs. 8 ozs. to 7 lbs. 15 ozs.	2	7	9	19	27	36	34	6	140	4	33	3	40	180
8 lbs. to 8 lbs. 7 ozs.	5	4	5	16	27	32	37	7	133	5	27	1	33	166
8 lbs. 8 ozs. to 8 lbs. 15 ozs.	1	1	8	8	22	24	18	1	83	3	18	3	24	107
9 lbs. to 9 lbs. 7 ozs.	1	2	1	4	12	11	16	4	51	2	12	—	14	65
9 lbs. 8 ozs. to 9 lbs. 15 ozs.	—	—	3	8	4	6	4	3	28	—	3	—	3	31
10 lbs. and over	—	—	1	8	3	6	6	1	25	—	6	3	9	34

*220 are excluded because birth weight was not reported.

TABLE IX-b (Percentages)

DISTRIBUTION OF MOTHERS BY TYPE AND AMOUNT OF PRENATAL CARE RECEIVED, AND BY THE BIRTH WEIGHT OF THEIR INFANTS, BORN IN THE BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Birth weight of infants	*Percentage of mothers who received medical prenatal care in Boston City Hospital Prenatal Clinic in the month of pregnancy stated below:*									*Percentage of mothers whose prenatal supervision was as stated below:*				
	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Total	Some prenatal care by private physician	No prenatal care	Not reported	Total	Grand Total
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 5 lbs.	5.5	—	3.4	2.4	1.1	1.6	—	2.8	1.4	4.0	15.5	17.4	15.0	5.4
5 lbs. to 5 lbs. 7 ozs.	—	3.2	1.7	5.5	2.2	2.4	5.4	7.1	3.8	—	3.6	2.2	3.3	3.7
5 lbs. 8 ozs. to 5 lbs. 15 ozs.	5.5	—	6.9	4.7	6.2	2.0	4.6	5.7	4.3	12.0	7.3	4.3	7.3	5.2
6 lbs. to 6 lbs. 7 ozs.	11.1	9.7	6.9	5.5	7.3	6.1	10.4	7.1	7.6	4.0	14.3	8.7	13.0	9.2
6 lbs. 8 ozs. to 6 lbs. 15 ozs.	5.5	19.3	12.1	11.0	9.5	14.6	10.8	21.4	12.6	4.0	10.7	26.1	12.0	12.4
7 lbs. to 7 lbs. 7 ozs.	22.2	22.6	22.4	21.2	20.2	26.4	20.8	24.3	22.6	20.0	18.3	19.6	18.5	21.4
7 lbs. 8 ozs. to 7 lbs. 15 ozs.	11.1	22.6	15.5	15.0	15.2	14.6	14.2	8.6	14.5	16.0	10.1	6.5	10.0	13.2
8 lbs. to 8 lbs. 7 ozs.	27.7	12.9	8.6	12.6	15.2	13.0	15.4	10.0	13.7	20.0	8.2	2.2	8.3	12.1
8 lbs. 8 ozs. to 8 lbs. 15 ozs.	5.5	3.2	13.8	6.3	12.3	9.7	7.5	1.4	8.6	12.0	5.5	6.5	6.0	7.8
9 lbs. to 9 lbs. 7 ozs.	5.5	6.4	1.7	3.1	6.7	4.5	6.7	5.7	5.3	8.0	3.6	—	3.5	4.8
9 lbs. 8 ozs. to 9 lbs. 15 ozs.	—	—	5.2	6.3	2.2	2.4	1.7	4.3	2.9	—	0.9	—	0.8	2.3
10 lbs. and over	—	—	1.7	6.3	1.7	2.4	2.5	1.4	2.6	—	1.8	6.5	2.3	2.5

220 are excluded because birth weight was not reported.

eral decades of rapid change. In little more than a century, the medical profession 'has done more for the human race than has ever before been accomplished by any other body of men'. . . . This new knowledge and technique, improved equipment, and the well trained personnel, haven't yet been made available generally. Development of facilities for their effective utilization has lagged far behind the progress of medical science." Thus many persons who have been able to maintain themselves in health without recourse to relief agencies have found themselves unable to pay for the elaborate medical examination and treatment necessary during pregnancy and childbirth. The majority of mothers receiving obstetrical care in the hospital, during the period studied, accepted the scientific equipment and services offered without realizing the cost and without making any attempt to pay for them. That the husbands of 90 per cent. of the group studied were earning less than $35 per week is convincing proof that they could not afford to pay for the care they received. Perhaps a few could have paid in part. Many lying-in hospitals have found it advisable to adjust rates to the incomes of the patients, on the assumption that this will result in greater appreciation of the services offered, and may also promote thrift and preserve self-respect.

In spite of educational and scientific advancement, we apparently have far to go in the way of insuring adequate prenatal supervision for our mothers. The findings regarding the antepartum care of mothers delivered during the period studied is a serious indication of the need of further educational activities for this purpose. Dr. John Polak[6], in writing of the practical value of prenatal care, has made the following statement: "One might just as well ask what has been accomplished by routine vaccination in the prevention of smallpox, or by immunization in the prevention of diphtheria or typhoid fever, as to question the practical and economic value of prenatal study." In answer to the question, when should prenatal care begin, Dr. Polak said, "Every woman should be under continuous medical supervision from the beginning of pregnancy, and be instructed in the hygiene of pregnancy, the danger signals of complications, and in the physician's as well as in her own responsibility for the successful completion of the contract."

No systematic program has as yet been carried on by the hospital which would induce prospective mothers to obtain adequate medical supervision during pregnancy. The Maternity Center Association of New York City has organized house to house canvass in certain districts, in connection with its efforts to place women of limited means under supervision early in pregnancy. The Boston City Hospital could make use of such means as clinic posters, clinic lectures, talks to mothers' clubs, films, etc. Printed literature on the subject of maternal and infant hygiene should be freely distributed in the clinics. Further coöperation with the Community Health Association, and with the finely equipped health centers of the city, should be stimulated.

Education will necessarily result in expansion of the service, but isn't this desirable? A city's health is its wealth, and "the greatest asset of a nation is the strength of its virile youth". Increase in knowledge has given us a growing appreciation of that most arduous of all vocations, — motherhood. The maternal and infant mortality rate is still alarmingly high. Unemployment, inadequate housing, ignorance of standards, and shiftlessness are factors still to be dealt with.

"Rarely does a more severe test come to the average woman than in childbirth. To pass through this experience with health unimpaired, or perhaps even improved, with a healthy infant to compensate for the unavoidable trials,

TABLE X

BIRTH WEIGHTS BY SEX, OF INFANTS BORN IN BOSTON CITY HOSPITAL, FEBRUARY 1, 1929 TO JANUARY 31, 1930

Birth weight	*Infants*					
	Both sexes		Males		Females	
	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total	1367*	100.0	704	100.0	663	100.0
Less than 5 lbs.	74	5.4	32	4.5	42	6.3
5 lbs. to 5 lbs. 7 ozs.	50	3.7	29	4.1	21	3.2
5 lbs. 8 ozs. to 5 lbs. 15 ozs.	71	5.2	33	4.7	38	5.7
6 lbs. to 6 lbs. 7 ozs.	126	9.2	60	8.5	66	9.9
6 lbs. 8 ozs. to 6 lbs. 15 ozs.	170	12.4	90	12.8	80	12.1
7 lbs. to 7 lbs. 7 ozs.	293	21.4	140	19.9	153	23.1
7 lbs. 8 ozs. to 7 lbs. 15 ozs.	180	13.2	84	11.9	96	14.5
8 lbs. to 8 lbs. 7 ozs.	166	12.1	86	12.2	80	12.1
8 lbs. 8 ozs. to 8 lbs. 15 ozs.	107	7.8	63	8.9	44	6.6
9 lbs. to 9 lbs. 7 ozs.	65	4.8	43	6.1	22	3.3
9 lbs. 8 ozs. to 9 lbs. 15 ozs.	31	2.3	22	3.1	9	1.4
10 lbs. and over	34	2.5	22	3.1	12	1.8

*220, 122 males and 98 females, are excluded because weight was not reported.

and with one's outlook as a result greatly broadened, is a blessing all have a right to expect who ordinarily enjoy a reasonable degree of health and are not overwhelmed with poverty[13]."

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COOPERATIVE CLINIC TOUR OF EUROPE

The Travel Guild, Inc., has secured the coöperation of several State Medical Journals to publish information about a Coöperative Clinic Tour of Europe.

Dr. Newell C. Gilbert, Professor of Medicine in Northwestern Medical School, will be the leader of the group.

The itinerary program of clinics and other informatory material may be found in a booklet which may be had on application to the New England Journal of Medicine.

The official announcement appears facing page viii of the advertising section of the issue of April 9.

SURVEY BY THE NATIONAL COMMITTEE FOR MENTAL HYGIENE, INC., SHOWS MANY GENERAL HOSPITALS PROVIDING CARE FOR MENTAL PATIENTS

122 Hospitals Report Special Facilities, 53 With 3,298 Beds

The movement for the care and treatment of mental patients in general hospitals in the United States has made marked progress during the past decade, according to a survey by The National Committee for Mental Hygiene which is to be published shortly.

Questionnaires were sent to some 600 hospitals registered as approved for interne training by the Council on Medical Education and Hospitals of the American Medical Association, and each of these hospitals was requested to furnish information as to the existence of clinics and psychopathic wards or departments where examination or treatment might be given to mental patients.

Of the 421 hospitals that replied, 122 reported special facilities; 17 reported incidental services; and a total of 3,298 beds for mental patients was reported by 53 of the 56 hospitals that have special wards.

Fifty-six of the 122 hospitals reporting special facilities for mental patients have special mental wards.

Ninety-seven of the 122 reported clinics.

Thirty-one of the 122 reported both wards and clinics.

Twenty-five of the 122 reported wards only.

Sixty-six of the 122 reported clinics only.

The survey was made in response to a need indicated by numerous requests from physicians, social workers and others for more extensive information than has been available up to this time. Heretofore the National Committee's list has contained the names of only about fifteen of the more widely known hospitals that have psychopathic wards or mental clinics or both, the latter usually conducted by state-hospital departments. A new list will be published showing all the general hospitals having regular or incidental services.

MORTALITY RATES

Telegraphic returns from 81 cities with a total population of thirty-six million for the week ending April 11, indicate a mortality rate of 13.2 as against a rate of 13.4 for the corresponding week of last year. The highest rate (22.5) appears for Wilmington, Del., and the lowest (7.1) for Lynn, Mass. The highest infant mortality rate (17.6) appears for Schenectady, N. Y., and the lowest for Kansas City, Kans., Long Beach, Calif., Somerville, Mass., Tacoma, Wash., and Utica, N. Y., which reported no infant mortality.

The annual rate for 81 cities is 13.9 for the fifteen weeks of 1931, as against a rate of 13.4 for the corresponding weeks of 1930.

NAVAJO INDIANS PRACTICALLY IMMUNE TO CANCER

Immunity to cancer seems to be a blessing enjoyed by the Navajo Indians according to a report of Dr. Clarence G. Salsbury, Superintendent of the Presbyterian Hospital at Ganado, Arizona.

In an effort to prove the general belief in this immunity, the hospital will make an especial study of the Navajos, and since the hospital treated 23,404 patients last year, 96 per cent. of whom were of these Indians, some information of value may be forthcoming. With respect to other diseases these people show little resistance because of more or less general malnutrition and ignorance of sanitation.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17171

DYSPNEA AND PRECORDIAL PAIN

MEDICAL DEPARTMENT

First admission. A Scotch-English linotype operator seventy-two years old entered April 26 complaining of dyspnea on exertion for five years and attacks of precordial pain for a year.

Twenty years before admission he had an operation for gall bladder disease following an acute attack of epigastric pain which doubled him up and caused vomiting. The gall bladder was not removed. Since that time at intervals of weeks to months he had had attacks of severe localized midepigastric pain with occasional vomiting, usually half an hour to an hour after meals and related to the kind of food eaten. These attacks had gradually become less frequent. Five years before admission he had hemorrhoids, with no trouble since that time except bright blood in the stool once six months before admission. For five years he had had dyspnea on exertion, increasing in the past year. Three years before admission a gastro-intestinal x-ray series done at a Boston hospital was negative, but a Graham test positive. For three years his bowels had been constipated. A year before admission he began to have attacks of pain across the upper chest radiating to the right arm, brought on by exertion or excitement and relieved by nitroglycerin. Fried foods seemed to aggravate these attacks. In the past three months there had been improvement under theominal. The present attack began four days before admission half an hour after dinner. He had throbbing midepigastric pain coming at intervals of a few minutes to one or two hours, the paroxysms continuing until admission, with nausea, no vomiting. He had been on a liquid diet and kept on working.

Thirty-one years before admission he had pneumonia with probable left empyema. Twenty-five years before admission he had gonorrhea. For ten years he had had some dysuria, difficulty in starting the stream and pyuria. For thirty years he had done night work as a linotype operator with constant exposure to lead.

Clinical examination showed a fairly well nourished man in no discomfort. The heart was enlarged to the left, the apex impulse and left border of dullness coinciding 9 centimeters to the left of midsternum, one centimeter outside the midclavicular line. The sounds were not of good quality. The first sound was replaced by a blowing systolic murmur at the apex. There was a slightly rougher systolic murmur at the aortic area. The aortic second sound was increased but not accentuated. The artery walls were palpable and tortuous. The arteries of the fundi were also tortuous. The blood pressure was 160/90 to 130/75. An electrocardiogram showed normal rhythm, rate 65, slight left axis deviation, somatic tremor. There were moist râles at the bases of both lungs. The liver edge was just palpable, smooth, not tender. There was tenderness under the right costal border. The pupils were normal. The knee jerks and ankle jerks were not obtained. The prostate was moderately enlarged, not hard.

The blood was normal except for a leukocyte count of 10,040. The urine showed pus in clumps. A Hinton test was negative. The renal function was 35 to 40 per cent.

X-ray examination showed the transverse measurements of the heart increased, the enlargement being almost entirely in the region of the left ventricle. The supracardiac shadow was normal in size. The aorta was prominent in the region of the knob. A Graham test was positive for gall bladder disease. There was no evidence of stones. An examination with a barium meal showed the stomach high and hypertonic. The pyloric end showed an inverted U-shaped loop. Peristalsis appeared to pass to the pylorus. The duodenum turned backward and was difficult to visualize. So far as could be determined it was normal.

The patient was symptom free until May 4, when he complained of soreness of the legs during the night and had a temperature of 100°. The night of May 5 he had frequency, dysuria and testicular pain. After this he was symptomless except for one attack of epigastric pain. May 10 he was discharged.

History of interval. After leaving the hospital he lived relatively symptom free for six months, with only one attack of "indigestion" which he aborted by a dose of sodium bicarbonate. He was able to work as many as ten consecutive nights with apparently no ill effects, though he was obliged to take a cab home because he was too utterly fatigued and dyspneic to walk a quarter of a mile. During the interval he had perhaps three dozen attacks of a sense of pressure over the anterior chest, usually mild, passing off in a few seconds, but on rare occasions severe enough to make him fear death. Until a month before readmission he had had frequent cramps in his arms and legs while at work, with some back pain. This would clear up after a "stretch" or a short walk. He had had frequent morning headaches, disappearing an hour to an hour and a half after he

was up. Four weeks before his second admission he developed an upper respiratory infection with severe cough and greenish sputum, lasting ten days. The attacks of cough lasted as long as five minutes, left him exhausted and preceded his rare and not severe attacks of precordial pain, sense of pressure and dyspnea. The pain lasted two or three days at a time. It was never severe enough to require morphia or other medication. In the most severe attacks he took nitroglycerin. During the three weeks before readmission he had been so worn out from the attacks of coughing that he had been unable to work more than four or five days. He became so weak, tired and dyspneic that the day before his readmission he called a physician, who advised him to come to the hospital.

Second admission, November 25, six months after his discharge.

Clinical examination was as before except for emaciation, fluid at the right base, tic-tac rhythm, increased enlargement of the heart (left border of dullness 10.5 centimeters from midsternum), and irregularity of the left pupil. The blood pressure was 130/80. An electrocardiogram showed normal rhythm, rate 90, slurred and widened QRS in all leads, flat T_1, low voltage, left axis deviation.

The specific gravity of the urine was 1.030 to 1.008. The sediment was loaded with leukocytes at 8 of 10 examinations, 5 to 25 leukocytes per field at the other two. There were rare to many red cells at 5 of 10 examinations, sugar at 16 of 23 tests, the slightest possible trace to a slight trace of albumin at 5 of 10 tests. Blood examination showed 9,700 leukocytes, 4,220,000 reds, hemoglobin 80 per cent. A Hinton test was negative.

The temperature was usually subnormal, 96° to 98°. The pulse and respirations were normal except for a terminal increase, pulse 120, respirations 31.

At admission the patient was dyspneic and wanted to sleep in a chair. After this he was symptom free until December 6, when he had slight substernal oppression following excitement. December 16 it was noted that he was having frequent attacks of tightness across the chest of which he would not complain. Another electrocardiogram showed normal rhythm, rate 90, low voltage, left axis deviation, slurred QRS in all leads. After being up a little in a chair he felt better. December 24 he had pitting edema of the ankles and questionable signs of fluid at the right base. During the next few days he had a very stormy time, two or three attacks of acute dyspnea a day, not typical of cardiac asthma but wheezy respiration unrelieved by nitroglycerin but relieved by morphia. By the second of January he was better. January 7 1950 cubic centimeters of fluid was removed from his chest with considerable relief. He still continued, however, to be very weak. He was given an intravenous of 100 cubic centimeters of 30 per cent glucose. Ten minutes later he had a severe attack of dyspnea lasting over an hour. Later five injections of 30 to 100 cubic centimeters of glucose were given with a buffer with no immediate reaction and possible improvement. February 1, however, it was noted that he had lost steadily for three days; even his hands were edematous. February 4 he was very low, with considerable mental confusion. February 5 he died.

Clinical Discussion

BY RICHARD C. CABOT, M.D.,
GEORGE W. HOLMES, M.D., AND
TRACY B. MALLORY, M.D.

NOTES ON THE HISTORY

Dr. Cabot: The negative x-rays and positive Graham test three years before admission seem to fit very well with the previous history.

Can anyone imagine how fried food could have any connection with that sort of pain?

A Student: It might be fat.

Dr. Cabot: How could fat give pain down the right arm? I think you are right, only you ought to have kept on a little further. There are certain kinds of food that by causing difficulty in digestion increase the work of the heart. Angina pectoris just after meals has often been noticed, like angina after exertion. The heart has to do more work in taking care of this food. The extra exertion brought on the heart by indigestion of fatty food might cause an anginal attack.

Let us put together the facts with which we go to the physical examination. He has had some hemorrhoids which presumably have nothing to do with the case. He has had gall bladder trouble for which he has been operated upon and which seems to have subsided. It may have something to do with the case, because gall bladder disease is sometimes thought to have something to do with weakening the myocardium. He begins to have pain which certainly suggests angina and which at his age we should assume to be angina unless first-rate evidence is brought to the contrary. There is some bladder trouble of the type which at his age is probably due to prostatic obstruction. We need not suppose anything more serious from it. With this we have constant exposure to lead over a long period. Ordinarily we do not think so much of that in etiology as if it were for a shorter time. Some of his pain might perfectly well have been due to lead, although lead colic is not a very sharply outlined clinical entity. Could the lead have had anything to do with the angina pectoris? It is believed that lead has something to do with arteriosclerosis. We expect to find evidence of arteriosclerosis, and if we get as far as an electrocardiographic examination we ex-

pect to find changes in the T wave and sometimes in the QRS complex associated with coronary disease.

There is not much proof of enlargement of the heart. One centimeter outside the midclavicular line is not much to go on, and that is all we have. "The aortic second sound was increased but not accentuated." I take it that means it was louder than the pulmonic, which it ought to be at his age, therefore not accentuated. The electrocardiogram showed apparently no change in the T wave.

We have then the evidence of arteriosclerosis with some enlargement of the heart, a systolic murmur and sclerosed arteries at the periphery and in the eyes, all of which we could have guessed pretty well just by knowing his age. But we have no positive evidence yet of coronary trouble.

The liver was not tender. A congested liver usually is tender. I do not see how they were not sure that the tenderness under the right costal border was not the liver.

Absence of knee jerks and ankle jerks does not at seventy-two mean as much as it would in younger people, but it needs some explanation.

Of course the prostate's being moderately enlarged and not hard does not tell us anything about its condition inside the bladder.

The leukocyte count of 10,040 is not abnormal.

So far we have nothing as I see it on which to base any intelligent diagnosis or treatment. We know that he is an old man and shows the signs usually seen with arteriosclerotic trouble. That is about all we know.

The significance of the inverted U-shaped loop Dr. Holmes will explain to us in a minute I hope. "The duodenum turned backward." Doesn't the duodenum always turn backward?

DR. HOLMES: Anatomically, yes.

DR. CABOT: Dr. Mallory, does it generally turn backward?

DR. MALLORY: Yes.

DR. HOLMES: I suppose that means backward more than usual.

The films of the stomach do not add sufficient evidence to draw any conclusions whatever from them. From such a description I should think it was a distorted stomach displaced by adhesions, etc., rather than any organic lesion.

DR. CABOT: He is said to have had a gall bladder operation. Is that enough to account for it?

DR. HOLMES: It is surprising the things you can have with no deformity following a gall bladder operation. He has a lesion which is not characteristic of organic disease of the stomach. I did not hear for what the gall bladder operation was done.

DR. CABOT: It was done for symptoms that sounded like stones, but they did not take it out.

DR. HOLMES: These films were taken after the preparation of the patient with shadocol. The gall bladder is not visible. That means at least a non-functioning gall bladder. The chest films show prominence of the left ventricle and normal width of the aorta. There is no evidence of aneurysm or dilatation. There is just what one would expect,—a slightly tortuous aorta with some hypertrophy of the left ventricle. Examination of the urinary tract showed the kidney outlines fairly well; no shadow suggesting renal stones. There is nothing unusual in the spine. We have a moon-shaped kidney pelvis of normal size.

DR. CABOT: Why do we see the kidney outline so unusually well in that film?

DR. HOLMES: The amount of fat that happens to be around the kidney has to be taken into consideration, and in a certain number of cases the kidney is apt to show more dense after uroselectan.

DR. CABOT: Does the amount of gas in the bowel make any difference?

DR. HOLMES: Gas overlying the kidney is apt to make it more difficult to see the kidney outlines.

DR. CABOT: We ought to give a guess as to what he was discharged for. I should say he was discharged for arteriosclerosis, angina pectoris, hypertrophy of the heart, and nothing else. What was the discharge diagnosis at the time?

MISS PAINTER: Arteriosclerotic heart disease, angina pectoris, chronic cholecystitis, chronic prostatitis.

DR. CABOT: They based the prostatitis on the clumps of pus. I think he might have had all those symptoms without any chronic prostatitis. Still, it is a perfectly proper gesture to say that he may have had it.

The significance of that fear of death depends upon whether the house officer said "Did you fear death?" or "What did you feel like?" There are many house officers who will suggest this phrase to the patient in such a way as to get a classical history that is not always backed up by the clinical findings.

We cannot do more than guess at the nature of the cramps. A man who has other evidences of arteriosclerosis, as he has, may have a certain amount of it in the peripheral arteries which in extreme degrees gives attacks usually called "intermittent claudication". But here it is improved by exertion instead of the opposite. We do not know much about these cramps.

The headaches are of the type that has often been spoken of in relation to kidney disease, also of course to sinus trouble. They are much more characteristic of the second than of the first.

Violent cough is often as bad as running upstairs as far as its effect on a weak heart is concerned.

NOTES ON THE PHYSICAL EXAMINATION

The electrocardiogram shows what we were looking for in the earlier examination. The flatness of the T_1 is not so significant as if we got it in some of the other leads too. We have some evidence of coronary trouble in this electrocardiogram, though not the complete picture.

There is no indication in the urine examination as to the amount of sugar. Generally as mentioned this way it means nothing significant. They gave him an intravenous dose of glucose, so that I take it they were not very much troubled about his sugar.

This is the first time that edema of the ankles has been noted, you observe.

DIFFERENTIAL DIAGNOSIS

Arteriosclerosis, hypertrophy and dilatation of the heart, no valve lesion, presumably coronary obstruction or narrowing; very probably I should think evidence of old cardiac infarction; no good reason to suspect new infarction; passive congestion of the lungs and less of the body; no good evidence of kidney disease; possible prostatic obstruction.

X-RAY INTERPRETATION APRIL 29, FIRST ADMISSION

The appearance is that of hypertrophy and dilatation of the left side of the heart with tortuosity of the aorta, consistent with arteriosclerotic heart disease.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Arteriosclerotic heart disease with anginal and congestive failure.
Chronic prostatitis.
Chronic cholecystitis.

DR. RICHARD C. CABOT'S DIAGNOSES

Arteriosclerosis.
Hypertrophy and dilatation of the heart.
Presumably coronary obstruction or narrowing.
Probably old cardiac infarction.
Passive congestion of the lungs, less of the other organs.
Possible prostatic obstruction.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Arteriosclerosis, general and coronary.
Old cardiac infarction.

2. *Secondary or terminal lesions.*

Chronic passive congestion of the liver and spleen.
Chronic cholecystitis.
Chronic benign vascular nephritis.

PATHOLOGIC DISCUSSION

DR. MALLORY: Autopsy showed well-marked arteriosclerosis. The heart weighed 475 grams. The coronaries showed marked calcification throughout. The larger branches were not occluded, but a number of the smaller second and third subdivisions were completely occluded. Scattered throughout the myocardium were several scars large enough to be seen in gross, but there was no single area of massive infarction.

The liver and spleen showed a slight degree of chronic passive congestion, not marked. The gall bladder was distended. There were marked adhesions about it, including adhesions to the duodenum. The duodenum itself was otherwise negative. There were no stones in the gall bladder. The wall was slightly thickened. The bile in it was normal in color but seemed to contain a little more mucus than usual. It is fair to assume that he had chronic cholecystitis. The kidneys weighed 300 grams. The capsules stripped, showing finely granular red surfaces typical of chronic benign vascular nephritis.

A STUDENT: How was the prostate?

DR. MALLORY: The prostate was negative in gross.

A STUDENT: Was the pancreas normal?

DR. MALLORY: Yes.

DR. CABOT: Should you feel very badly if anybody called that an arteriosclerotic kidney without nephritis?

DR. MALLORY: No.

DR. CABOT: Were the scars in the myocardium probably the results of the old occlusions you saw in the branches?

DR. MALLORY: Yes, I think so without any doubt.

CASE 17172

A CASE OF DIFFICULTY IN SWALLOWING AND IN BREATHING

SURGICAL DEPARTMENT

PRESENTATION OF CASE

DR. GILBERT T. HYATT*: This patient was a fifty-seven year old Italian foundry worker who came to the Eye and Ear Infirmary December 22 with a history of having been well until five months previously, when he began to have difficulty in swallowing, a feeling as though foods stuck in his throat. This had grown worse. For the past week it had taken a long time to get foods of all kinds down. He had not at any time had pain on swallowing or talking. A week before entry he began to have difficulty in breathing, at first only on severe exertion but gradually growing worse until at present he had dyspnea while lying quietly in bed, and made considerable noise in breathing. During the past four weeks he had lost twenty pounds.

*Junior interne on the West Surgical service.

His past history was negative except for a cough for almost a year productive of thick white sputum.

His family history is not significant except that his wife had one miscarriage at four and a half months following four normal pregnancies.

Physical examination showed a short-necked, obese Italian breathing with loud laryngeal stridor. The heart was negative. The blood pressure was 150/80. The chest expansion was poor. Much of the breathing was abdominal. There were normal breath sounds obscured all over the chest by stridor. Inspiratory and expiratory squeaks and wheezes were heard throughout the lung fields. There was bronchial breathing at both apices, probably transmitted from the bronchi. Laryngeal examination showed the right cord in adduction, with very slight movement or none. The left cord appeared to move normally. Both arytenoids were somewhat injected and swollen, more markedly on the right. There was very little movement of the left arytenoid. No tumor mass or ulceration was seen.

X-ray examination of the chest showed very marked increase in density in the superior mediastinum with increase in width, especially to the right.

December 24 tracheotomy was performed under local anesthesia. The thyroid isthmus was cut and tied. The first ring of the trachea was cut. A small bronchoscope was introduced. Two or three inches below the wound a half-moon slit, convex posteriorly, could be seen between the nearly approximated surfaces of the trachea. No growth was seen. The patient became very cyanotic. A Mosher life-saving tube was introduced past the obstruction with great relief to the patient. The next day the Mosher tube was removed and a short tracheotomy tube put in to keep the wound open. The patient was transferred to the Massachusetts General Hospital.

Clinical examination at this hospital was essentially the same. The tracheotomy tube was fouled and did not reach the trachea. It was removed with relief to the breathing.

The urine was negative. The red blood cell count was 3,750,000, the hemoglobin 70 per cent, the white blood count 8,300. The differential count and the smear were normal.

X-ray examination showed the diaphragm normal in outline and position, limited in excursion. There was an area of density in the region of the superior vena cava and the innominate artery which extended upward into the neck and appeared to flatten the esophagus without definitely obstructing it. The arch of the aorta was prominent. No definite evidence of dilatation of the aorta was made out. The lung fields were clear.

The patient remained in the ward several days. Tumor Clinic consultants did not advise x-ray therapy without a more definite diagnosis. The patient's respiratory difficulty increased. The whole right chest became dull. X-ray examination indicated that this might be due to lack of aeration rather than to consolidation.

As a last resort mediastinal decompression was decided upon and done. The patient continued to lose ground, however, breathed with increasing difficulty, and was cyanotic in spite of the administration of oxygen. He died six hours after the operation.

DR. EDWARD D. CHURCHILL: This man was in the surgical ward for nearly a week, and was apparently slowly suffocating to death from obstruction somewhere in the upper portion of the mediastinum.

The operation was not strictly speaking a mediastinal decompression. I look upon mediastinal decompression as an attempt to enlarge the superior outlet of the thorax when obstruction is due to a tumor mass within the rigid circle of bone formed by the ribs, the spine and the sternum. Under such circumstances one sees distended neck veins and sometimes puffiness and edema of the face because the blood cannot get back into the chest. This man did not have distended neck veins, so we knew beforehand that cutting the sternum would not relieve the pressure. Our purpose was to rule out definitely a localized collection of pus or a benign tumor or a plunging substernal goiter,—something which offered a chance at relief.

Under novocain the sternum was split from the sternal notch to the third interspace. Exploration revealed a tumor surrounding the trachea extending from about the level of an inch above the sternal notch down into the mediastinum as far as I could reach. It was very hard,—obviously carcinoma. A tracheotomy was done at the lowest possible point. By inserting my little finger into the tracheotomy wound I found the trachea markedly constricted. It was obviously a hopeless situation. The man was given opium and morphine and died that night.

DR. GEORGE W. HOLMES: The films show a mass on the right side obscuring the apex. The most interesting finding is evidence of compression of the trachea, which shows in both views. We get from the films an idea of how far down the tumor extends.

X-RAY INTERPRETATION

There is probably metastatic malignancy in the upper right mediastinum.

PATHOLOGIC REPORT

The specimen of tissue from the mediastinum shows epidermoid carcinoma type II.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Substernal neoplasm with tracheal compression.

ANATOMIC DIAGNOSES

Epidermoid carcinoma of the esophagus with compression of the trachea and involvement of the apex of the right lung.

Cirrhosis of the liver.
Pneumothorax.
Collapse of the upper lobes of both lungs.

Pathologic Discussion

Dr. Tracy B. Mallory: We found at autopsy a very extensive tumor the major portion of which lay between the esophagus and the trachea, running from an upper level at the lower end of the larynx down to a short distance above the bifurcation of the trachea. The trachea was markedly compressed by the lesion to a mere slit. The tumor had grown through the tracheal wall, involving the submucosa, but the epithelial layer was normal, so that I feel sure it was not primary in the trachea. When we examined the esophagus we found a different appearance. There again the tumor passed through the esophageal wall, but at one point involved the mucosa, which was ulcerated. Very near the point of the tumor involvement we found a very large area of leukoplakia, which is a common precancerous lesion. I suspect this tumor developed from another such area. It had grown down well into the mediastinum and had actually involved the apex of the right lung and surrounded all the great vessels and the nerves. One of our sections shows involvement of a large nerve which cannot be identified. I do not know whether or not it was the phrenic. The tumor is a very well differentiated, rather slowly growing epidermoid. Dr. Broders at the Mayo Clinic believes that 80 per cent or more of esophageal carcinomas are highly undifferentiated and rather rapidly growing tumors. It has not been our experience here. We have found here a great number of cases of moderate and a few of low malignancy.

The other findings in the case were a localized empyema on the right side covering the surface of most of the right lower lobe. There was very dense fibrinous pleurisy and in the midst of it a multilocular cavity filled with pus. There was also pulmonary collapse restricted to the upper lobes, only the lower ones being air-containing, a most unusual reversal of the ordinary situation.

A complete surprise of no importance in the symptomatology of the case was a relatively marked cirrhosis of the liver.

Have you any further comment, Dr. Churchill?

Dr. Churchill: Exploratory operations on dying patients are thankless tasks and usually lead only to disappointment. Nevertheless I do not believe that we can sit by and allow a patient to die of respiratory obstruction without an effort to assure ourselves that the situation really is hopeless.

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OBSTETRICS AT THE BOSTON CITY HOSPITAL

IN another column of this issue of the *Journal* is published a study of the obstetrical statistics of the Boston City Hospital from the standpoint of a social worker. This paper illustrates particularly some of the benefits deriving from systematic pregnancy care in the out-patient department of a large hospital, and accruing thence to the patients, the hospital, and the community.

Obstetric cases have always been admitted to the wards of the Gynaecological Department since its establishment at the Boston City Hospital, and this phase of the work of the Service has steadily increased. In the year covered by Mrs. Bridges' study (1929), there were 1587 deliveries. In the year 1930 there were nearly 1800 deliveries, approximately one-tenth of the total number of births in the city of Boston, and more than occurred in any other institution.

Already the capacity of the three wards at the Boston City Hospital now devoted to obstetrics is taxed to the limit; and the rapid turnover, necessary to accommodate the growing number of patients, shortens undesirably the duration of puerperal stay in the hospital. It is clear that the time is not far distant when further provision should be made to meet the obstetric demands of metropolitan Boston. In her paper, the author presents effectively some of the reasons why this provision for amplification of obstetric work should be made at the Boston City Hospital.

THE OATH REQUIRED OF CANDIDATES FOR MEMBERSHIP IN THE AMERICAN COLLEGE OF PHYSICIANS

". . . I PLEDGE myself . . . to consider ever primary to my own, the welfare of patients dependent upon my professional knowledge and skill; ever to respect the interests and reputations of my colleagues; as occasion requires, to supplement my own judgment with the wisdom and counsel of competent medical specialists; to render my assistance willingly to my colleagues; to extend freely my professional aid to the unfortunate, the poor and the needy; to advance steadily in knowledge by the reading of authoritative medical literature, by attendance at important gatherings of medical men, by postgraduate instruction from men of eminence and position, and by the free interchange of experience and opinion with my associates.

"Further, I promise, in so far as in me lies, to shun the public press or public gatherings of laymen where my attitude might be regarded as seeking self-advancement; to avoid selfishness and commercialism in my professional practice; to influence patients to appreciate their financial responsibilities to their medical advisers; to adjust my compensation to the circumstances of my patients and to make such charges commensurate with the services rendered and to avoid discrediting my profession by seeking unwarranted compensation. . . ."

Here is a code of ethics which should be endorsed by every practitioner. The American College of Physicians has a membership of about 2,300. Although only a small percentage of the practitioners of this country, these men can exert a great influence on the profession if this code is emphasized on every appropriate occasion.

Its spirit and application, if generally observed, should have a definite influence in the solution of many of the problems before the public.

If the public can be led to believe that this high standard is the underlying principle of service, there will be less criticism of doctors and irregular practice will be more generally discredited. The solution of the problems of the cults is in the hands of doctors.

A BROADCASTING SERIES

In an effort to place before the laity some fundamental facts for guidance in health matters, the Massachusetts Department of Public Health has been giving a series of radio talks by physicians who have been selected because of their standing as authorities in the several subjects deemed necessary for general instruction.

While the publication of these messages to the people in a medical journal may convey no information to professional persons, physicians may be inspired to use the method in the routine work among their patients.

It is expected that the doctor of the future will be more generally a teacher of health problems among those who come under his ministrations and it may be that these untechnical statements will serve as examples to be modified and adapted to the persons whom he may feel inclined to interest in these subjects.

The first of these addresses will be found on page 891.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Smithwick, R. H. B.S., M.D. Harvard University Medical School 1925. Assistant Surgeon to Outpatients, Massachusetts General Hospital. His subject is: "The Treatment of Peripheral Vascular Lesions." Page 845. Address: 319 Longwood Avenue, Boston.

White, James C. A.B., M.D. Harvard University Medical School 1923. F.A.C.S. Associate in Surgery, Massachusetts General Hospital. Instructor in Surgery, Harvard Medical School. His subject is: "Experiences with Sympathetic Ganglionectomy in Peripheral Circulatory Disease." Page 852. Address: Massachusetts General Hospital, Boston.

Allen, Arthur W. A.B., M.D. Johns Hopkins University Medical School 1913. F.A.C.S. Associate Surgeon and Chief of the Peripheral Circulatory Clinic, Massachusetts General Hospital. Instructor in Surgery, Harvard Medical School. His subject is: "The General Management of Circulatory Disorders of the Extremities." Page 859. Address: 264 Beacon Street, Boston.

Lund, Charles C. A.B., M.D. Harvard University Medical School 1920. F.A.C.S. Instructor in Surgery, Harvard Medical School. Assistant Visiting Surgeon, Boston City Hospital. Surgeon to Outpatients, Collis P. Huntington Memorial Hospital. His subject is: "Iliac Embolism with Acute Cardiac Decompensation." Page 863. Address: 319 Longwood Avenue, Boston.

Bridges, Mrs. Hazel W. B.R.E. Boston University 1926. B.S. Simmons College, 1929. Supervising Nurse, Washington Hospital, Washington, Pennsylvania, 1918-1920. Supervisor, Department of Social Work, Boston City Hospital 1930-. Her subject is: "Mothers and Their Babies Cared for at the Boston City Hospital in 1929." Page 869. Address: 75 Nottinghill Road, Brighton, Mass.

THE BOSTON MEDICAL LIBRARY

AMBROISE PARÉ

1509-1590

It is of little significance, to a genius, to have been born 50 years after the invention of the telephone but it doubtless meant a great deal to have been born 50 years after the discovery of the art of printing. The invention of the printing press was a ferment that set in motion very many processes that were simply awaiting the arrival of an agency which was to bring together the ideas and speculations of mankind that master minds might seize hold upon them and clarify human thought to an extent not possible before that time. That is what Columbus, Copernicus, Erasmus, Luther, Vesalius, Linacre and many another were doing in their particular lines of achievement and that is what Ambroise Paré did for the surgery of his day.

He was born of poor parents in the town of Leval in the Province of Mayenne, France. Whether it was with the hope that he might enter the priesthood that he was provided with a tutor to instruct him in the Latin language, who was himself a priest, is not known but that was the way it was often brought about. If that was the plan it was frustrated, for it was not long before he became apprenticed to a "barber surgeon" in his native town, who taught him how to bleed, do dressings and treat fractures. It was just at this juncture that there occurred one of the coincidences that so often seem to mark the turning point in the career of genius. How many another doctor has had a similar experience? Colot, one of the celebrated lithotomists of that day, having to cut a man for stone, asked Paré to hold the patient for him, and from that experience he derived an interest in the major branches of surgery that determined him to go to Paris for further study. There were only three surgical texts at that time and under the guidance of an instructor he read and mastered them, viz., those of de Vigo, Lanfranc and Guy de Chauliac. He shortly became associated with a prominent surgeon for whom he did dressings and assisted at operations. It was at this time also that he took lessons in elocution which seems to have been a subject frequently studied, probably because,

up to the time of the printing press, those in a position to teach anything were of necessity obliged to do so by word of mouth, hence the need of knowing how to express oneself clearly and well. There followed in due course an appointment as resident pupil at the Hôtel-Dieu where opportunity for study was abundant. After three years' residence he was appointed, in 1536, to a surgeonship under the Colonel-general of artillery, René de Mont-Jean. He was twenty-seven years of age at that time. This campaign was in Italy and after the fall of Turin, Paré returned to Paris and took up civil practice. As above stated there were only three surgeries in existence. Mondino's anatomy covered what was known on that subject and, as might be expected, was full of inaccuracies and fanciful theories. Chemistry, as such, was unknown. Medicine was a medley of "shot gun" prescriptions and obstetrics languished in the hands of midwives. Such was the situation of practice when Paré came upon the scene. Up to the time that Pope Alexander III, in 1163, issued his edict recalling the clergy to the cultivation of their own especial field, surgery had, for the most part, been done by the priests. A second papal edict, in 1215, reinforced the first by punishing through excommunication, any priest who should practice surgery or who would not refuse his benediction to any who professed it in any manner whatsoever. When the priesthood were penalized in this way for practicing surgery they turned the work over to the barbers, who had shaved and tonsured them, after having taught them to bleed, extract teeth, and dress wounds and ulcers. It was in this manner that the "barber surgeons" came to be recognized, which they continued to be until the middle of the 17th century. In 1268 St. Louis, in an endeavor to reward the surgeons of the Crusades, founded, at Paris, the first College of Surgeons, to belong to which one must needs have an academic training, follow a prescribed course of medical studies and pass a creditable examination. The "barber surgeons" were not eligible to this society which was named in honor of St. Cosme. Paré early gained admission to the College on the strength of his treatise on wounds, published in 1545. The distinction between the "master surgeon" and the "barber surgeon" was kept up until 1655 when they were incorporated in one college. Various formalities of dress, as the "long robe" and the "short robe", visiting their patients riding on a mule, and the employment of an unintelligible jargon in speaking with their ill-educated patients served to distinguish the two classes, until Molière, through the sarcasm of his ridicule, succeeded in breaking up the custom. Paré was appointed in 1552 as surgeon to Henry II and in succession to Francis II, Charles IX and Henry III. He was a sort of counsellor to them all, following them in their campaigns and attending them in their retirement. He was equally popular with the public and in the life of the armies, with which he served, there were many experiences that showed the esteem in which he was held by the rank and file. It was said that it was by his advice to Charles IX that the massacre of St. Bartholomew was brought to an end. Though it is true that Albucasis, the Arabian physician, had suggested the use of the ligature to control hemorrhage at amputations he never seems to have used or advocated it, being content to employ the actual cautery and lose his patients from secondary haemorrhage, which was the common experience. It was due to Paré that the barbarous custom was given up though it was a long time after Paré's day before his method was universally adopted, for his contemporaries in Paris, out of jealousy of his success and his popularity with the Court, bitterly inveighed against him and his practices. As a result of his observations upon the treatment of gunshot wounds, which were universally regarded as poisoned, he was led to abandon the usual practice of pouring boiling oil or pitch into them. Naval vessels about to go into an engagement were said to have cauldrons of this material kept hot and ready for use. It is easy to see how, on the strength of these two reforms in the prevailing surgical practice, the popularity of the man who instituted them might have been built up and because of his long military connection given wide publicity, especially when his methods were attended with far better results. His operative skill must have been considerable and was enhanced by his familiarity with anatomy. He apparently was an early advocate of reducing dislocated shoulders by putting the foot in the axilla. He devised a boot for the treatment of club foot, later ascribed to Mr. Syme of Edinburgh. He suggested several other instruments and his writings show designs for artificial limbs, hands and noses. He also had the boldness to remove "joint mice" from the knee, lanced the gums of his own child to facilitate the eruption of a tooth and operated for harelip.

Paré was never idle. He labored under something of a handicap in reading the literature of his time in the original, in that he was not proficient in the Latin language but he accumulated a considerable library, was interested in natural history and had a collection gathered from Asia and Africa as well as from Europe, and where he went in his travels with the Army he made it a point to learn as much as he could from talking with others. Writing, for him, was a laborious undertaking but he persisted and became more and more proficient as he grew older. His first publication came out after his return from the Italian campaign and was printed in 1545. This was called "A Method of Treating Gunshot and Other Wounds." Fi-

nally, in 1575, a complete edition of his works was published in folio form, illustrated with 300 woodcuts of instruments, human anatomy and in particular a great variety of monsters about which he wrote an interesting chapter. In 1582 a beautiful Latin edition was published in Paris. Subsequent to this, six others were issued from Frankfort, the last appearing in 1652. An edition was printed in Dutch at Leyden in 1604. Besides these there were five German editions, four from Holland and several from England, the most complete one of the latter being that of Thomas Johnson, from London, in 1634. In 1840 Malgaigne edited a beautiful 3 volume, royal octavo edition with illustrations and a biographical sketch of his life. In this Malgaigne conclusively shows that the authorship of Paré's works, which had been ascribed by some of his detractors to another, was really vested in him. Much of the doubt which had been thrown about this question came from the College of Paris, composed largely of physicians who were jealous of Paré and who could not believe that any one doctor could have written about so many different subjects. His piety, which was one of his outstanding virtues, has been most frequently cited by quotation of a phrase which he often employed, viz., "I apply the remedy, or I dress the wound, and God cures." The first clause of this quotation recalls the fact that he was quite as distinguished in his time for his medical as he was for his surgical cures. Very little is known of his domestic life. He was twice married and had two daughters by the second wife but all trace of the subsequent history of the family has been blotted out. In 1804 Napoleon tried to follow this up but without success. Paré had a lucrative practice and this, supplemented by the salaries paid him out of the royal exchequer, gave him a considerable income, enabling him to support a large establishment in a fashionable part of Paris, and an estate in the country, nearby, to which he went for week-ends and for the holidays with his friends and family. It was here that he spent, in quiet, the latter days of his active life, working to the end, making corrections in the manuscripts of the fourth edition of his works and elaborating a treatise on fevers, which was found among his papers some years after his death. His 81 years of devoted application to his profession prove the value of the motto which he chose as a guide for his life: "Labor improbus omnia vincit." He died on the 20th of December 1590.

MASSACHUSETTS LEGISLATIVE NOTE

Following is the text of the Chiropractic bill as finally drafted for presentation to the Legislature. Comparing this with the one published February 12, 1931, page 335, there are a few changes which do not materially change the purpose of the bill.

HOUSE 1538

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Thirty-One.

An Act to regulate the Practice of Chiropractic.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Chapter thirteen of the General Laws is hereby amended by inserting after section twelve the following new section:—

Section 12A. The board, in the examination of applicants for registration as chiropractors, shall have the assistance of two chiropractors who shall be appointed by the governor, with the advice and consent of the council, shall have personally attended and graduated, at least five years prior to their appointment, from a legally chartered chiropractic school, college or university having the power to grant degrees in chiropractic, and shall have been residents of the commonwealth for at least three years. They shall act under the direction of the board and shall each receive, in full compensation for his services, one hundred and fifty dollars annually. The members of the board who shall be designated by the board to act in the examination of such applicants shall each receive for such services one hundred dollars annually; and such members and the two chiropractors assisting them shall be allowed for their traveling expenses necessarily incurred in the performance of their duties such sums as may be approved by the governor and council.

SECTION 2. Chapter one hundred and twelve of the General Laws is hereby amended by inserting after section twenty-three, under the caption, REGISTRATION OF CHIROPRACTORS, the following twelve new sections:—

Section 23A. "Chiropractic," as used in this chapter, shall mean the external treatment of the human spine by mechanical or manual means. This and the eleven following sections shall not apply to surgeons of the United States army, navy or of the marine hospital service, nor to physicians or osteopaths registered in the commonwealth.

Section 23B. No person shall practice or attempt to practice chiropractic in the commonwealth, or hold himself out as a chiropractor, or designate himself, or describe his occupation, by the use of any words or letters calculated to lead others to believe that he is a registered chiropractor, unless he is registered as provided in section twenty-three D.

Section 23C. The board shall prepare and distribute forms of applications for registration, certificates of registration and such other documents as may be necessary or convenient in carrying out sections twenty-three A to twenty-three L, inclusive. It shall hold at least two examinations annually, at times and places to be designated by it.

Section 23D. Applications for registration as chiropractors, signed and sworn to by the applicants, shall be made upon blanks furnished by the board. If an applicant furnishes the board with satisfactory proof that he is twenty-one or over and of good moral character, and that he has been graduated from a reputable chiropractic school, college or university, as defined in the following section, he shall, upon the payment of twenty-five dollars, be examined by the board as provided in section twenty-three G, and, if found qualified, shall be registered as a chiropractor and receive a certificate as a registered chiropractor, signed by the chairman and secretary of the board. Said certificate shall entitle its holder to practice chiropractic in this commonwealth and shall designate him as a chiropractor and shall be publicly displayed at his principal place of business so long as he shall continue to practice chiropractic. An applicant failing to pass an examination satisfactory to the board shall, within one year thereafter, if not disqualified under section twenty-three F, be entitled to a reëxamination at a meeting of the board for the examination of applicants upon payment of a further fee of three dollars; but two such reëxaminations shall exhaust his privilege under his original application. Every such certificate shall expire on the last day of the year when it was granted, but upon the payment of two dollars may be renewed by the board for each subsequent year without examination. Persons registered hereunder shall not be permitted to prescribe or administer alcohol or drugs for internal use, or to perform operations in surgery, or to engage in the practice of obstetrics or to hold themselves out, by virtue of such registration, as and for other than chiropractors.

Section 23E. A chiropractic school, college or university shall be considered reputable if it possesses the following qualifications:—First, it shall be incorporated and authorized by its charter to confer the degree of doctor of chiropractic; Second, it shall give a course of at least twenty-two hundred sixty-minute daylight hours to matriculants possessing the educational qualifications required for graduation from a public high school; Third, it shall confer such degree only after personal attendance of the applicant therefor at such course, and upon successful completion thereof.

Section 23F. The board shall refuse to issue a certificate to, or, after hearing, may revoke any certificate issued by it to, and cancel the registration of, any chiropractor convicted of a felony; and shall refuse to issue a certificate to, or, after hearing, may revoke any certificate issued by it to, and suspend, for a period not exceeding one year, the certificate of, any chiropractor who has been guilty of gross and confirmed use of alcohol in any of its forms while engaged in the practice of his profession or of the use of narcotic drugs; or of publishing or causing to be published or of distributing or causing to be distributed any literature contrary to section twenty-nine of chapter two hundred and seventy-two; or of acting as principal or assistant in carrying on the practice of chiropractic by an unregistered person or by any person convicted of the illegal practice of chiropractic or by any registered chiropractor whose license has been revoked either permanently or temporarily; or of aiding or abetting in any attempt to secure registration, either for himself or for another by fraud; or, in connection with his practice, of defrauding or attempting to defraud any person. The board may subsequently, but not earlier than one year thereafter, reissue any certificate formerly issued by it or issue a new certificate and register anew any chiropractor whose certificate was revoked and whose registration was cancelled.

Section 23G. The board shall examine each applicant as to his qualifications for the practice of chiropractic. Such examination shall be wholly or in part in writing, in the English language, shall be of a scientific and practical character, and shall include the subjects of anatomy, physiology, symptomatology, hygiene, gynecology, sanitation, physiological chemistry, histology, pathology, chiropractic analysis and in addition to these subjects shall be examined in the principles and practice of chiropractic as taught in reputable chiropractic schools, colleges and universities and shall include practical demonstrations, and shall be sufficiently thorough to test the applicant's fitness to practice chiropractic.

Section 23H. Except as provided in section sixty-five, whoever, not being lawfully authorized to practice chiropractic within the commonwealth and registered under section twenty-three D, holds himself out as a practitioner of chiropractic, or uses any of the titles, words, or letters "chiropractic", "chiropractic practitioner", "doctor of chiropractic", "D.C.", or any other title or letters, either alone or with qualifying words or phrases in such manner, or under such circumstances, as to indicate that he is engaged in the practice of chiropractic, or practices or attempts to practice chiropractic in any of its branches, or whoever practices chiropractic under a false or assumed name or under a name other than that by which he is registered, or whoever personates another practitioner, or whoever practices or attempts to practice any fraud in connection with the filing of an application, or whoever files an application under a false or assumed name, or under any other than his own, or whoever personates or attempts to personate another applicant for registration during an examination, shall be punished by a fine of not less than one hundred nor more than one thousand dollars or by imprisonment of not less than one month nor more than one year, or both. A person rendering chiropractic service in violation of this section shall receive no compensation therefor.

Section 23I. Any person holding a license or certificate issued by a chiropractic board of any other state maintaining standards at least equal to those of this commonwealth may, after a written examination, be registered by the board upon payment of a fee of twenty-five dollars and the production to the board of his diploma, the certificate or license issued in such other state and satisfactory evidence of good moral character.

Section 23J. Every person registered under section twenty-three D shall, before entering upon the

practice of chiropractic, submit his certificate of registration to the clerk of the town where he proposes to practice, and shall inform the clerk that he is the person designated therein, and shall pay him fifty cents. Thereupon, the clerk shall record the name and address of such person and the date and number of his certificate, and the said record shall be open to public inspection, and the clerk shall furnish a copy thereof to the board within one week.

Section 23K. Whoever obtains or attempts to obtain registration under section twenty-three D by any fraudulent means, or violates any provision of section twenty-three B, shall, except as provided in section sixty-five, be punished by a fine of not less than one hundred nor more than five hundred dollars or by imprisonment for not less than three months nor more than one year, or both. Whoever violates any provision of the preceding section shall be punished by a fine of not less than three nor more than twenty dollars.

Section 23L. All necessary expenses incurred in carrying out the provisions of the eleven preceding sections and in investigating complaints for violation thereof shall be paid by the commonwealth, but they shall not in any year exceed the amount received by the commonwealth for fees under said sections during that year.

MISCELLANY

RHEUMATISM THEN AND NOW*

BY ROBERT B. OSGOOD, M.D.

The Massachusetts State Board of Health in broadcasting this talk on "Rheumatism Then and Now" is anxious that you should realize four things. The *first* thing is that the diseases which we speak of as rheumatic diseases have existed since man has been on the earth. The *second* is that at the present time in your own State of Massachusetts these rheumatic diseases are causing more disability than any other diseases. The *third* is that a huge sum of money is being lost annually by the sufferers themselves, by those who must support them, by the tax-payers and by the State, because these diseases are not being controlled as well as they might be. The *fourth* thing is that although in the past there has been much mystery as to the cause of these diseases and much confusion and difference of opinion among doctors as to the most efficient methods of treatment, there is at the present time much less mystery as to their causes and much less confusion as to the best methods of treatment, so that their control ought to be much easier now than then.

What do we mean by rheumatism?

(a) There is a form of rheumatism which is called rheumatic fever. This affects both children and adults. There is severe pain and swelling and heat in some or all of the joints and there is fever. The attack usually comes on quite quickly. The disease is probably caused by a germ, though it has never been absolutely proved. The joints get well and people get over the attack, but in many cases the heart is affected and may cause trouble later in life. The treatment is chiefly rest and medicine, and there is much active investigation going on at present as to its exact cause and as to the best way of avoiding heart complications.

(b) There is another kind of rheumatism which is called muscular rheumatism and perhaps its commonest forms are stiff neck and lumbago. There are many stiff necks and many backaches which are not caused by rheumatism, but many people do not realize this. Any persistent stiff neck or lumbago is probably not due to muscular rheumatism, and it is the doctor's responsibility to find out to what it is due.

Muscular rheumatism often starts by exposure to cold or damp or by sitting in a draft. Sometimes poisons in the body cause it and rest, heat, certain medicines and then regular exercise relieve it.

(c) The most prevalent form of rheumatism is called chronic arthritis. It is the most important kind of rheumatism because unless it is stopped early, it causes permanent damage to the joints and lasting disability. It often comes on very gradually and usually without any noticeable fever, and sometimes even without much pain, but there is almost always more or less stiffness in the joints. There are two main types of chronic arthritis. One form usually begins before fifty, affecting children as well as adults, and the other form does not usually begin until after forty. The type that usually, but not always begins early in life is most likely to be crippling. Thin, tired women are more likely to have this kind of rheumatism than well-nourished robust men. The type that *usually* begins later in life is more common in well-nourished men and women who consider themselves in good health otherwise. It is not crippling as the first type, and the joints do not become perfectly stiff.

What causes Chronic Arthritis?

We must look farther than the joints themselves to find the real causes of chronic arthritis. The joints give us the discomfort, but the trouble does not start in the joints. Something has happened in the body which is preventing the blood vessels from supplying the joints with the right kind of food. There may not be enough food supplied or the blood may be bringing food that contains joint poisons.

What slows up the blood stream or poisons it?

If we use our body machines badly or if we run them too hard; if we do not give them good air to breathe or the proper kind of fuel in the way of food; if we work or live in damp places or get chilled, then the circulation of our blood becomes less active; we feel tired and our digestion does not go on as it should. The marvelous laboratories inside of us do not turn out the standard products of health. Our bowels tend to be sluggish, and we do not get rid of the waste products as quickly or as thoroughly as we ought.

There may be also nests of germs in our bodies from which poisons escape into the blood stream.

*Broadcast March 4, 1931.

We may not know that these nests exist, for they may not give us pain, yet our physician may find there are collections of germs in your tonsils or in the sinuses connected with your noses, or the dentists may discover little pockets of pus about the roots of your teeth. If we are in good health, we can take care of the many bacteria which everyone has in his mouth and in his bowels. So we should first be sure that these nests of germs are the real causes of our troubles before we have too many teeth pulled or too many operations done to remove the supposed but perhaps not the real cause of our joint pain. We should say that the most common causes of chronic arthritis were bad use of our body machines, overtire or fatigue, poor circulation, imperfect action of the bowels, the wrong kind of food and nests of germs which the body cannot keep under control.

How can we control chronic arthritis and what are the best methods of treatment?

The only way chronic arthritis can be controlled is to get people to seek their physicians' advice as soon as their joints begin to feel stiff or painful, and as soon as they notice any swelling. Wise physicians will pay attention to these symptoms and not laugh them off. They will seek out the underlying causes of joint trouble and not simply write a prescription for medicine or pills. There is real danger in taking too much medicine or too many "cures" for rheumatism. Your physician will try to find out what is worrying the patient or making him tired. If patients will seek physicians' advice early and physicians will take these patients' symptoms seriously, we believe that in the great majority of cases the progress of the disease may be stopped. Do not wait until the joints have been permanently damaged. You cannot be threatened with typhoid fever, you either have it or you haven't it, but you can be threatened with chronic arthritis.

The first thing is to set the house of your body in order, to stand and to sit and to lie in the correct positions which make it possible for you to breathe deeply of fresh air and give the heart room enough to pump the blood; to get enough exercise and what is still more important, to get enough rest and sleep. Keep from getting overtired. Be careful what you eat, and how you eat it. Chew every mouthful of food and eat slowly. Most people who are threatened with chronic arthritis eat too much of the starches and sweets, such as large amounts of white bread, cereals, macaroni, rice, potato, candy, pastry, and puddings. They eat too little fruit, and green vegetables, and drink too little water and milk. These natural foods contain what are known as vitamins and are necessary to health. Keep the bowels moving regularly by diet and exercise and good habits and avoid laxatives if possible. Consult your doctor before using them regularly.

If the joints have already become deformed, it is very probable that surgical operation may make it possible for you to use them better and without pain. Many medicines given under a doctor's order may help chronic arthritis, but there is no single drug or patent medicine which truthfully can be said to cure arthritis.

We want you to help your State Department of Health to control rheumatism by paying attention to it early and by preventing it from crippling you; Physicians know a little more about rheumatism "now" than they did "then" and they are beginning to know enough to control it. It ought to be controlled, not only for your own sakes, but for the sake of your state. Massachusetts can hold first place in this control if you will help.

EXTENSION OF SERVICE OF THE LIBRARY OF THE SURGEON GENERAL'S OFFICE

Dr. Arthur MacDonald of Washington has suggested that since the Library of the Surgeon General's office is often used by physicians that the hours available for study should be extended to ten P. M.

He alleges that this library is managed by those who do not see the necessity of making its facilities open to the medical profession evenings and holidays.

He urges the same open hours as are maintained by the Congressional Library.

AN APPEAL FOR FUNDS FOR THE CHILDREN'S CARDIAC CLINIC

Associated with Mrs. Fritz B. Talbot a committee is engaged in raising funds for the Children's Cardiac Clinic of the Massachusetts General Hospital.

This group was formed in 1916 with the purpose of reinforcing the work of this clinic by the employment of a social worker. The patients in this clinic should be followed up.

Last year about four hundred and fifty children came under the care of one worker with a part time assistant. Funds are needed to extend the services of this organization.

SUNLIGHT WILL PREVENT RICKETS AND CONVULSIONS

"Science Service" of Washington, D. C., claims that half of the infant deaths due to convulsions can be prevented by the use of cod liver oil and sunshine.

Tetany is associated with rickets and since rickets can be prevented or cured by cod liver oil and sunshine, one source of disaster to infants can be done away with.

Rickets is especially serious with children in cold climates because so much time has to be spent indoors. The descendants of parents who came from southern climates are especially prone to rickets.

Sunshine and vitamin D are needed for northern children. Experiments conducted in New Haven by Dr. Eliot seem to have proved these statements.

In Porto Rico there are almost no cases of rickets because the children spend so much time out-of-doors.

NEW LUNG DISEASE APPARENTLY DUE TO FUNGUS

In a report recently issued by the Public Health Service, the studies of medical officers on a lung disease due to unknown cause encountered by them while investigating the effects of dust upon miners, are described.

About 125 cases of the disease are described as having been found by x-ray examination among more than 18,000 individuals during routine physical examinations. The disease is, for the time being, designated miliary lung disease due to unknown cause.

A majority of the cases did not have sufficient symptoms to cause them to stop work or to seek medical aid. The most characteristic finding was a large number of discrete, dense, shot-like spots scattered over the lung areas. Tubercle bacilli were present in only 2 of the 88 cases in which an examination was made of the sputum.

Unstained smears of sputum of 31 cases (all those examined) were positive for fungus. The two types of fungi were identified as Aspergillus fumigatus fisheri and Aspergillus niger.

Other workers have reported a condition and designated it as miliary calcification of the lungs, which may be the same condition as that mentioned in the report above described.

The condition, miliary calcification, described in this report may be due primarily to fungus infection.—*United States Public Health Service.*

CORRESPONDENCE

CHANGES IN THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Editor *New England Journal of Medicine:*

May I announce through your columns, with the deepest regret, the resignation of Dr. Clarence L. Scamman as Deputy Commissioner of Public Health and Director of the Division of Communicable Diseases in the Department of Public Health to take effect May 15, 1931. Dr. Scamman goes to the Commonwealth Fund of New York City in charge of the development of rural health service in various states. Fortunately one of the states in which the Fund is coöperating is Massachusetts, and the Southern Berkshire and Nashoba Health Districts are already in operation. Thus Dr. Scamman will keep in touch with this important work here and we will continue to profit by his wisdom and advice.

He came to Massachusetts in 1926 after a distinguished service with Dr. Chapin in Providence. His professional skill, admirable judgment and personal integrity have advanced public health practice in this State. In an unusual way he combined the ideal and the practical without being unreasonable on the one hand or weak-kneed on the other. He will long be remembered, admired and missed.

Dr. Gaylord W. Anderson has been appointed to succeed Dr. Scamman. Dr. Anderson graduated from Dartmouth College and the Harvard Medical School. He came with the Department first as Epidemiologist and later as Assistant Director of the Division of Communicable Diseases. He promises to be a distinguished successor to Dr. Scamman.

Dr. Nels A. Nelson will succeed Dr. Anderson as Assistant Director of the Division of Communicable Diseases. Since 1928 Dr. Nelson has been with the Department as Epidemiologist in charge of gonorrhea and syphilis control. He has shown himself particularly clear thinking and versatile in this particularly baffling field. Also he has, as occasion warranted, shown himself skilled in other epidemiological problems. In his new position he will still devote his major effort to venereal disease control.

Dr. Walter W. Lee begins as State Health Officer in the Berkshire District with headquarters at North Adams. He succeeds Dr. Frederick S. Leeder, who has been appointed Health Officer of the Southern Berkshire Health District. Dr. Lee, after studying at the Harvard School of Public Health, served as Epidemiologist, first with the State Health Department of Indiana and later of Connecticut. With this unusual experience he will be particularly valuable.

Dr. Roderick Heffron has also been appointed to take charge of the field work in connection with the pneumonia study being conducted by the Department under a grant from the same Commonwealth Fund which is now taking Dr. Scamman away from us. Dr. Heffron has just completed a medical appointment at the Massachusetts General Hospital.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

THE APPOINTMENT OF DR. DWIGHT O'HARA

Tufts College Medical School
416 Huntington Avenue
Boston, Massachusetts

April 9, 1931.

Editor, the *New England Journal of Medicine:*

Under a grant of the Commonwealth Fund of New York a Department of Preventive Medicine is being established at Tufts College Medical School. Dr. Dwight O'Hara has been elected to the professorship. It is planned to make this a clinical department in order that students may be taught preventive medicine from the standpoint of the individual patient. In the past, public health work has had largely to do with sanitation in a more general way. The aim at Tufts College Medical School will be to equip students so that they may feel responsibility for preventive problems in dealing with actual cases.

Yours very truly,

A. W. STEARNS, *Dean.*

RECENT DEATHS

JACKSON—DR. ROY CHASE JACKSON, a Fellow of the Massachusetts Medical Society, died at the Wernersville Pennsylvania State Hospital for the Insane, March 24, 1931, aged 50 years.

Dr. Jackson, a graduate of the University of Vermont College of Medicine in 1906, joined the Massa-

chusetts Medical Society in 1915, when connected with the staff of the Worcester Massachusetts State Hospital at Worcester. Two years later he was a member of the staff of the Harrisburg Pennsylvania State Hospital. In 1920 he was at the Worcester hospital again, in 1923 at the Norwich Connecticut State Hospital, in 1928 at the Wilkesbarre Pennsylvania hospital, the following year at the Brattleborough Retreat, Brattleborough, Vermont, and finally back at Wernersville. He was a member of the American Psychiatric Association and of the New England Society of Psychiatry.

Dr. Jackson is survived by his widow.

BULLARD—Dr. William Norton Bullard, retired neurologist of Boston, died in that city April 13, 1931, at the age of 77.

Dr. Bullard, a native of Newport, R. I., had been living at "Highwood," Lenox, for several years, not having been in good health. He was a graduate of Harvard in the class of 1875 and of Harvard Medical School five years later. Dr. Bullard was responsible for the passing by the Legislature of the act establishing a state hospital for the care of adult epileptics in 1895. He had contributed many incunabula to the Boston Medical Library.

He was a member of the Massachusetts Medical Society.

LOOMIS—Dr. Charles Otis Loomis of 86 Charles Street, for more than fifty years an active Boston practitioner, died Sunday, April 12, 1931, following a long illness. He was seventy-three years of age.

Dr. Loomis was of old New England stock on both sides, his mother having been Elizabeth Rebecca Crocker of Winsor, Conn., and his father, Alfred Otis Loomis of Colchester, Conn. His paternal grandfather was an Otis of the Boston family of that name.

He was born in Colchester, Conn., spent his boyhood in Philadelphia and studied at Jefferson Medical College from which he was graduated in 1878. From that time until his recent retirement he practiced medicine in Boston, for some time making a specialty of obstetrical work and later engaging in general practice.

He was a member of John Abbot Lodge of Masons of Somerville and also a member of the Church of the Good Shepherd, Cortes street, this city.

He is survived by his widow, Mrs. Sue E. Loomis; a daughter, Dorothy Loomis, and two sons by a previous marriage, Walter Otis Loomis, and Guy Alfred Loomis. A sister, Mrs. Minnie L. Weller, lives in St. Paul, Minn.

O'BRIEN—Dr. Joseph Jeremiah O'Brien, of Dorchester died at his home April 17, 1931, aged 54 years.

He was educated at Boston College high school, Boston College and at Tufts College Medical School, where he received his M.D. in 1902. In 1905 he joined the Massachusetts Medical Society. He had served as examining physician to the Boston Department of Public Works and as staff physician to St. Margaret's and the Farley Hospital in Dorchester. He was a member of the Foresters, Knights of Columbus and the Elks.

Dr. O'Brien is survived by his widow, a son who is now a student at the Tufts College Medical School and by two daughters.

BLACKWAY—Dr. Charles Everett Blackway died April 13, 1931, from carcinoma of the stomach at the Union Hospital, Fall River, at the age of 39. A graduate of Brown (Phi Beta Kappa) and the Harvard Medical School, 1918, Dr. Blackway had served as house officer at the Boston Lying-In, the Providence Lying-In, the Rhode Island General, and the Providence City Hospitals. He was a member of the Massachusetts Medical Society and the New England Obstetrical and Gynaecological Society and was secretary of the Fall River Medical Society. He was Obstetrician and Gynaecologist to the Union Hospital, Fall River. He leaves a wife, two sons and a daughter.

OBITUARY

JAMES TILLEY HOUGHTON, M.D.

James Tilley Houghton, M.D. son of the late Judge Houghton of New York Superior Court, was born in 1884 at Saratoga, N. Y., and obtained his early education in the schools of that city. He received the degree of A.B. from Harvard in 1908 and that of M.D. in 1911. During 1911 and 1912, he served as House Officer on the Gynecological and Obstetrical Service of the Boston City Hospital, after which he began the practice of medicine in Saratoga.

Dr. Houghton was by temperament an Elizabethan and the progress of the World War appealed urgently to his instinctive love of adventure. With the intention of enlisting in the French Foreign Legion, he embarked in 1917 on the Lusitania for the ill-fated voyage which was terminated by her being torpedoed and sunk off the coast of Ireland. Aboard the same vessel was Madame DePage, wife of the Belgian Ambassador to the United States, who had just completed a tour of America, and was returning with funds of over $1,000,000 which she had collected here for the benefit of her country in its heroic struggle. When the Lusitania sank, Dr. Houghton, an expert swimmer, rescued Madame DePage and placed her in safety on a life raft. Attempting to climb aboard himself, he was knocked back into the ocean by a blow from an oar, which inflicted an extensive scalp wound of which he always bore the scar on his forehead. Swimming about for a time, Dr. Houghton finally made his way unaided to land and during the hours which ensued assisted in caring for survivors who were brought ashore. Subsequently he made his way to London and, enlisting there in a British unit, served with it in the ranks for the remainder of the war, being twice decorated for gallantry in action.

Returning to the United States after the War, Dr. Houghton settled in New York City and resumed and continued there the practice of medicine until his death which occurred untimely in March, 1931. To

those who remember him, Dr. Houghton was a charming and fascinating character. Physically robust and vigorous, he excelled in all athletic and outdoor sports. Socially he was a delightful companion, full of buoyancy and with a fund of entertaining anecdotes and good humor. He was one of those, who by their exploits in other fields, enrich the accomplishment of their professional activities.

NEWS ITEM

THE TITLE OF PROFESSOR TURNER'S ADDRESS—Professor George Grey Turner, who will be the recipient of the Bigelow Medal, June 10, has announced that the subject of his address to be delivered on that occasion is "Some Experiences in the Surgery of the Oesophagus."

NOTICES

PHYSICIAN WANTED

Hubbardston, Mass., needs a resident physician.

This town has a population of 1007 with a good school, three churches and three stores.

The natural and civic conditions warrant investigation.

MEDICAL VETERANS MEETING AND LUNCHEON

The annual meeting of the Medical Veterans of the World War will be held at Philadelphia, June 9, 1931 at 12.30 P.M. There will be a luncheon on this occasion in the main ballroom of the Bellevue-Stratford hotel. The Ex-Presidents of the American Medical Association, and the Surgeon Generals of the Government Medical. Services have been invited as guests of honor. There will be only two speakers, but they will be men of national prominence. General George E. deSchweinitz is the Chairman of the Committee of Arrangements, and reservations for seats should be made through the Treasurer of the Committee, Dr. Charles F. Mitchell, 2003 Pine Street, Philadelphia, a check for $3.00 being mailed to him. Ladies accompanying Medical Veterans will be entertained at luncheon by the Ladies' Auxiliary Committee at the same hour in the same building. Colonel John O. McReynolds, Aux. Res., the President of the Medical Veterans' section of the Association of Military Surgeons, will preside.

THE CUTTER LECTURES ON PREVENTIVE MEDICINE

By Karl F. Meyer, Ph.D., Professor of Bacteriology and Director of the George Williams Hooper Foundation for Medical Research, University of California, San Francisco, California.

1. BOTULISM AND ITS CONTROL—Monday, April 27, 1931.

2. A SAFE MILK—(A Motion Picture), Tuesday, April 28, 1931.

At the Harvard Medical School, Amphitheatre Building E, 5 P. M.

3. UNDULANT FEVER IN THE WEST—Tuesday, April 28, 1931, at the Peter Bent Brigham Hospital, 8.15 P. M.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine and that they should be delivered in Boston and be free to the medical profession and the press.

The medical profession, medical and public health students, the press and others interested are cordially invited to attend.

MEDICAL CLINIC, PETER BENT BRIGHAM HOSPITAL

At 3.30 on Thursday, April 30, in the amphitheatre of the Peter Bent Brigham Hospital, a medical clinic will be given by Dr. H. A. Christian, to which physicians are cordially invited. Subsequently, these clinics will be discontinued until the first Thursday in October next.

REPORTS AND NOTICES OF MEETINGS

GREATER BOSTON MEDICAL SOCIETY

A joint meeting of the Greater Boston Medical Society, the Beth Israel Hospital and the Trudeau Society was held on Tuesday, April 7, 1931, at the Beth Israel Hospital.

Dr. Howard Lilienthal, Consulting Surgeon to Mt. Sinai and Bellevue Hospitals, New York City, read the paper of the evening. His subject was "Bronchiectasis and Lung Abscess." In his opening remarks Dr. Lilienthal emphasized the necessity for considering thoracic surgery as a specialty. The operating conditions found on opening the thorax and the possible sequelae of operations in this region are somewhat different from those encountered elsewhere in the body and only those men who have given their time and efforts to obtain an intelligent understanding of the phenomena involved can obtain the results desired.

The preoperative examination of the lungs should never omit the use of the x-ray. It is especially important that a routine plate be made with the patient lying on his side, for it is only in this way that the full extent of pulmonary lesions such as lung abscess can be portrayed. Only in an emergency is it permissible to operate without complete roentgenological studies.

Abscesses of the lung may, generally, be classified as blood borne or parenchymatous abscesses and air borne or respiratory abscesses. The parenchymatous type is seen as the result of septic emboli and many ultimately rupture into a bronchus. This type should come to operation before a rupture has taken place. The respiratory type is produced by blocking of the bronchial system at some point resulting in the formation of numerous bronchiectatic abscesses. Suppurative pneumonitis, a condition characterized by numerous small abscesses, often coalescing, is probably a lymph borne infection and may be con-

sidered as belonging to the parenchymatous type. Cerebral abscess is more prone to occur with this type of infection.

The causes of lung abscess are varied and include phlegmon, boils, otitis media and suppurations in the nasal sinuses. The speaker reported one case resulting from a diverticulum of the esophagus.

There is some difference of opinion as to the treatment of an acute abscess. Generally it seems to be wise to watch the patient for a week and if the abscess is extending, then operate. If on the other hand the patient is improving, it is probably better to wait and see what happens, for a certain per cent. will get well without operative treatment. Lipiodol may be used if there is reason to feel that something may be overlooked. Low tension therapeutic pneumothorax may be tried in early cases. On the operating table the patient's head should always be low in order to guard against air emboli. The electric cautery is being used extensively in this case.

Speaking briefly of empyema, he said that the commonest cause was perforation of a peripheral abscess into the pleura.

Lantern slides were used to make clear the conditions referred to in the paper.

Dr. Wyman Whittemore in discussing the paper brought out the value of lobectomy in localized bronchiectasis. Formerly the mortality of this procedure was prohibitive but under improved technique is now twenty-four per cent.

Dr. D. Campbell Smith emphasized the value of group study of these cases by the surgeon, internist and bronchoscopist.

Dr. Mark H. Joress referred to several interesting points with respect to the relationship of pulmonary tuberculosis and lung abscess.

OFFICERS ELECTED AT THE ANNUAL MEETING OF THE NEW ENGLAND DERMATOLOGICAL SOCIETY

At the annual meeting of the New England Dermatological Society, held on April 8, 1931, the following officers were elected for the ensuing year:

President, Dr. Arthur M. Greenwood, 416 Marlboro Street, Boston, Massachusetts.

Vice President, Dr. Rudolph Jacoby, 270 Commonwealth Avenue, Boston, Massachusetts.

Secretary, Dr. William P. Boardman, 388 Commonwealth Avenue, Boston, Massachusetts.

Treasurer, Dr. William P. Coues, 12 Monmouth Court, Brookline, Massachusetts.

NEUROLOGISTS WILL MEET IN BERNE, SWITZERLAND

The International Neurological Congress, an event already planned before the war, will be held in Berne from August 31 to September 4. Some 700-800 neurologists from over thirty different countries will meet in the centrally located Swiss capital, in order to discuss the newest discoveries and experiences in the realm of modern Neurology. Mr. Henri Haeberlin, the President of the Swiss Confederation, will be Honorary Chairman.

A large contingent of American neurologists and psychiatrists as well as members of psychiatric societies is expected to take advantage of the exceptional opportunities it affords.

Sessions of the Congress will be held in the Municipal Casino, a building admirably suited to the purpose. Social events and excursions to famous points of interest in the vicinity will be provided for the entertainment of the visitors. Berne, the Congress city, is one of the most delightful and most suitable places for this event. It is not only noted as one of the loveliest and most beautifully located medieval cities in the Old World, but it is also an educational and medical center of foremost rank.

Members of the International Neurological Congress will moreover have an opportunity to visit the Swiss Exhibition for Hygiene and Sport, held in Berne from July 24 to September 20. Huge exposition buildings are now being erected on the spacious Viererfeld and the manifestation will cover every possible feature connected with human health and the various factors which contribute to its upkeep from infancy on.

THE TRI-CITY MEDICAL SOCIETY

At the April meeting of the Tri-City Medical Society, composed of the cities of New London, Norwich and Willimantic, Conn., Dr. P. E. Truesdale of Fall River, Mass., furnished the program.

This consisted of talking motion pictures of Posture in Surgery, and Prolapse of the Uterus, by the University Film Foundation.

It was one of the largest meetings ever held and was very instructive.

A vote of thanks was given to Dr. Truesdale for the entertainment.

CLARENCE E. SIMONDS, M.D., *President.*

CARDIAC COURSE

The seventh meeting of the Cardiac Course of the New England Heart Association will be held in John Ware Hall at the Boston Medical Library on Wednesday afternoon, May 13, at four-thirty.

Heart Pain and Discomfort

1. The Cardiac Nerves. Dr. James C. White, Boston.
2. Angina Pectoris and its Treatment. Dr. Frank Howes, New Bedford.
3. Precordial Pain (other than Angina Pectoris) Tenderness, and Palpitation. Dr. Paul D. White, Boston.
4. Discussion to be opened by Dr. Granville E. Hoffses, Manchester, N. H.

The meeting is to be held on Wednesday, May 13, rather than May 6, to avoid conflict with other meetings.

NEW ENGLAND CONFERENCE ON MENTAL HYGIENE IN EDUCATION

SPONSORED BY THE CONNECTICUT, RHODE ISLAND AND MASSACHUSETTS SOCIETIES FOR MENTAL HYGIENE

Chamber of Commerce
80 Federal Street, Boston, Massachusetts
May 1 and 2, 1931

FRIDAY, MAY 1—4.30 P. M.

Section I—For Nursery, Kindergarten, and Primary Grade Teachers

Chairman: Dr. Henry B. Elkind, Boston.

Speakers:

Dr. William E. Blatz, Toronto.
"How the Teacher May Create Mental Hygiene Problems."

Abigail A. Eliot, Boston.
"The Nursery School Teaching Social Adjustment."

Caroline D. Aborn, Boston.
"Preparing the Kindergarten Child for the Grades."

Section II—For Grammar Grade and Junior High School Teachers

Chairman: Esther F. Green, Providence.

Speakers:

Dr. Bruce Robinson, Newark.
"Mental Hygiene Problems in Grammar-Grade Children."

Dr. Bessie L. Gambrill, New Haven.
"The Practice of Mental Hygiene in the Class Room."

John P. Sullivan, Boston.
"The Place of Mental Hygiene in a Health Education Program."

Section III—For High School and Normal School Teachers

Chairman: Ruth Mellor, New Haven.

Speakers:

Dr. Grace E. Bird, Providence.
"Teaching Teachers Mental Hygiene."

Dr. Percy G. Kammerer, Avon, Connecticut.
"Some Problems in Emotional Adjustment."

Dr. Lawrence A. Averill, Worcester.
"The Hygiene of Instruction."

(Note: Discussion in Sections will follow reading of papers.)

FRIDAY, MAY 1—7 P. M.—DINNER MEETING

Chairman: Hon. Herbert C. Parsons, Massachusetts Commissioner of Probation.

Address of Welcome: Hon. Payson Smith, Massachusetts Commissioner of Education.

Speakers:

Dr. Smiley Blanton, Vassar College.
"Modern Education as Viewed by the Mental Hygienist."

Dr. Helen T. Woolley, Teachers College, Columbia University.
"Mental Hygiene as Viewed by an Educator."

SATURDAY, MAY 2—10 A. M. SHARP—ROUND TABLES

1. Helen P. Taussig, Newark, New Jersey.
"Teaching of Mental Hygiene in Grammar Grades."
2. Dr. Rose S. Hardwick, Boston.
"Psychological Handicaps in Children."
3. Dr. E. S. Rademacher, New Haven.
"The Teacher's Own Mental Health."

SATURDAY, MAY 2—The afternoon program is offered in coöperation with the New England Regional Conference of the American Association of Visiting Teachers and the Boston Home and School Visitors Association.

Informal Luncheon—1 P. M.

Presiding: Frances Curtis, Boston.

"The Visiting Teacher"—2.30 P. M.

Chairman: Hon. Frederick P. Cabot, Justice, Boston Juvenile Court.

Speakers:

Sara M. Holbrook, New Haven.
"How the Visiting Teacher Works with the Teacher."

Walter F. Downey, Boston.
"The Visiting Teacher as Seen by a School Administrator."

Dr. E. Van Norman Emery, New Haven.
"What the Mental Hygienist Expects of the Visiting Teacher."

It will be necessary for all persons wishing to attend to register at the Conference. Reservations for luncheon and dinner must be made in advance.

Registration fee—$.50. Dinner $1.50. Luncheon—$.75.

To make advance reservations or to obtain further information, please address your requests to the New England Conference on Mental Hygiene in Education, 3 Joy Street, Boston, Mass.

THE MASSACHUSETTS PSYCHIATRIC SOCIETY

The next meeting of the Massachusetts Psychiatric Society will be held at the Boston Psychopathic Hospital, Friday evening, May 1, at eight o'clock. The program will consist of a paper by Abraham Myerson, M.D., and Julius Loman, M.D., "The Dynamics of Intracranial Pressure Conditions, With Special Reference to the Internal Jugular and Carotid Puncture" and one by Samuel Cottrell, M.D., "Encephalitic Sequelae and Their Treatment."

WINFRED OVERHOLSER, M.D., *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

On May 7, at 2:00 P. M. the Censors' meeting for the examination of candidates will be held at the Boston Medical Library, 8 The Fenway, Boston.

Candidates from schools on accepted lists will forward application with certificate of graduation to the secretary at least one week prior to date of examina-

tion. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass., two weeks prior to date of examination. Fee for all candidates $10.00.

ALEXANDER A. LEVI, M.D., *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

The annual meeting will be held April 29, 1931, at the Commander Hotel, Cambridge, Mass.

PROGRAM

11:30 A. M.—Business meeting. Election of officers.

12 M.—Paper by Dr. Irving J. Walker: "Some Changing Aspects in Surgery."

1 P. M.—Dinner.

ALEXANDER A. LEVI, M.D., *Secretary.*

THE BETH ISRAEL HOSPITAL PEDIATRIC CLUB

The next regular meeting of the Pediatric Club will be held in the auditorium of the Beth Israel Hospital on Thursday, April 30, 1931 at 8.15 P. M.

Subject:

"The Early Recognition of Mental Diseases in Children", by Jacob Kasanin, M.D.

Discussion by Simeon C. Allen, M.D., Isadore Green, M.D.

RUTH WEISSMAN, M.D., *Secretary.*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the amphitheatre of the Peter Bent Brigham Hospital at 8:15 o'clock on the evening of Tuesday, April 28.

PROGRAM

Presentation of cases.

Cutter lecture on preventive medicine:

"Undulant Fever in the West", by Dr. Karl F. Meyer of the George Williams Hooper Foundation for Medical Research, University of California.

Students, physicians, nurses cordially invited to attend.

WILLIAM P. MURPHY, M.D., *Secretary.*

SOCIETY MEETINGS CONGRESSES AND CONFERENCES

April 24—Belmont Medical Society. See page 788, issue of April 9.

April 27-28—Cutter Lectures on Preventive Medicine. See page 895.

April 28—New Hampshire Surgical Club. See page 788, issue of April 9.

April 28—Harvard Medical Society. See notice above.

April 30—Medical Clinic at the Peter Bent Brigham Hospital. See page 895.

April 30—The Beth Israel Hospital Pediatric Club. See notice above.

May 1—The Massachusetts Psychiatric Society. See page 897.

May 1-2—New England Conference on Mental Hygiene in Education. See page 897.

May 7—The next lecture of the William Harvey Society will be held on Thursday evening, May 7, 1931, at the Beth Israel Hospital Auditorium at eight o'clock. The speaker of the evening will be Rabbi Harry Levi, of the Temple Israel. The subject will be "Education and Life." Dr. David Berlin, of the Tufts College Medical School faculty, will be chairman.

May 11-14—Meeting of the National Tuberculosis Association at Syracuse. See page 1310, issue of December 25.

May 13—Cardiac Course. See page 896.

June 8-12—Woman's Auxiliary to the American Medical Association. See page 743, issue of April 2.

June 8-14—International Hospital Congress. See page 521, issue of March 5.

June 9—Medical Veterans Meeting. See page 895.

June 9—The Scientific Session of the American Heart Association. See page 742, issue of April 2.

June 16-19—Catholic Hospital Association. See page 690, issue of March 26.

July 6-11—Medical Clinic, Paris. See page 520, issue of March 5.

July 26-31—Third Congress of the Pan American Medical Association. See page 632, issue of March 19.

July 27-31—Third International Congress of Radiology, Paris. See page 789, issue of April 9.

Aug. 31 - Sept. 4—Neurologists will meet in Berne, Switzerland. See page 896.

September 14-17—The American Public Health Association. See page 632, issue of March 19.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

September 17—Details to be announced.

Essex North District Medical Society

Next meeting: Amesbury Country Club, Amesbury, May 13, 1931; dinner at 12.30. Speakers, Wm. H. Ross, President, New York State Medical Society, "A Medical Society's Public Relations Committee at Work."

Wm. J. French, Medical Director Commonwealth Fund, New York, "Fellowship Grants to Doctors in Rural Communities."

Essex South District Medical Society

Thursday, May 7—Censors meet at Salem Hospital at 3:30 P. M.

Tuesday, May 12—See page 690, issue of March 26.

Franklin District Medical Society

May—The meeting will be held on the second Tuesday of May at 11 A. M. at the Weldon Hotel, Greenfield.

Middlesex East District Medical Society

May 13—At Wakefield.

Middlesex South District Medical Society

April 29—See notice elsewhere on this page.

May 7—See page 897.

Norfolk District Medical Society

May—Annual Meeting. Date and details to be announced.

May 7—Censors' Meeting for examination of candidates at 171 Warren Street, Roxbury, 4 P. M. Candidates from schools on accepted list will forward application with certificate of graduation to the secretary at least one week prior to date of examination. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass., two weeks prior to date of examination. Fee for all candidates $10.00.

FRANK S. CRUICKSHANK, Secretary.

Norfolk South District Medical Society

May 7—The censors will meet at 11:30 A. M. at the Norfolk County Hospital, South Braintree. The Society meets at 12.

NATHAN R. PILLSBURY, Secretary.

Suffolk District Medical Society

April 29—Combined meeting with the Boston Medical Library. This meeting will be held at 8:15 P. M. Election of Officers.

The medical profession is cordially invited to attend this meeting.

GEORGE S. DERBY, M.D.,
President, Suffolk District Medical Society.

LELAND S. McKITTRICK, M.D.,
Secretary, Suffolk District Medical Society.

HILBERT F. DAY, M.D.,
Boston Medical Library.

May 7—The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, May 7, 1931, at 4 o'clock.

Candidates should make personal application to the Secretary, and present their medical diplomas at least one week before the examination.

LELAND S. McKITTRICK, Secretary.
205 Beacon Street, Boston, Mass.